

# CURRICULUM VITAE

NIKOLAUS CORRELL, PHD  
ASSOCIATE PROFESSOR

## APPOINTMENTS

---

- from 11/17      *Director*, Interdisciplinary Research Theme on Multi-functional Materials, College of Engineering, University of Colorado at Boulder (on sabbatical 2018/2019)
- June 2017      *Visiting Professor*, Institute FEMTO-ST, CNRS, Université Bourgogne-Franche Comté, France.
- from 05/17      *Associate Professor*, Computer Science Department, University of Colorado at Boulder.
- 08/16-08/22      *CEO & Founder* Robotic Materials Inc.
- 08/09-05/17      *Assistant Professor*, Computer Science Department, University of Colorado at Boulder.

## EDUCATION

---

- 11/07-08/09      *Post-doc*, Computer Science and Artificial Intelligence Laboratory, MIT. Advisor: Daniela Rus.
- 10/03-10/07      Dr. ès science, Computer and Communication Sciences, École Polytechnique Fédérale Lausanne (EPFL), Switzerland.  
Ph.D. Thesis: “Coordination Schemes for Distributed Boundary Coverage with a Swarm of Miniature Robots: Synthesis, Analysis and Experimental Validation”.  
Advisor: Alcherio Martinoli.
- 10/00-04/03      Dipl. Ing. ETH, Electrical Engineering, Eidgenössische Technische Hochschule Zürich (ETHZ), Switzerland.

## HONORS AND AWARDS

---

- College of Engineering and Applied Science Textbook Recognition Award for “Introduction to Autonomous Robots: Mechanisms, Sensors, Actuators, and Algorithms”, MIT Press, 2022.
- “2022 Open Educator Award”, University of Colorado, for “Introduction to Autonomous Robots”

- “Japanese Society of Mechanical Engineers’ (JSME) Presidents Award”, Industrial assembly competition at the World Robot Summit 2018
- College of Engineering and Applied Science Textbook Recognition Award for “Introduction to Autonomous Robots” (N. Correll), 2018.
- 1st price, Blue-Sky Track International Symposium on Robotics Research (ISRR) for the contribution “Materials that Make Robots Smart”, 2017.
- 2nd place in the “Assembly” track at the Robotic Grasping and Manipulation competition at the International Conference on Intelligent Robots and Systems, Vancouver, Canada, 2017, with students Radhen Patel and Branden Romero.
- 2nd place in the “Hand-in-hand” track at the Robotic Grasping and Manipulation competition at the International Conference on Intelligent Robots and Systems, Daejeon, Korea, 2016, with students Rebecca Curtis, Radhen Patel and Branden Romero.
- 2016 Provost Faculty Achievement Award
- Finalist for *Best Paper Award* and *Best Student Paper Award* at Robotics: Science and Systems, June 2016.
- Winner of the RoboSoft Manipulation Challenge, Livorno, Italy, April, 2016 with PhD students Nicholas Farrow and Yang Li.
- *Best Paper Award* at the 3rd International Conference on System-Integrated Intelligence, Paderborn, Germany, June 2016.
- *Best Paper Award* at the Int. Symp. on Distributed Autonomous Robotic Systems, November 2014.
- NASA Early Career Faculty Space Tech Research Grant 2012.
- “*Best in Show*” and “*Best in Most Inclusive and Usable Design*” at the International Symposium for Wearable Computing Design Exhibition (ISWC), Newcastle, UK, 2012.
- NSF CAREER Award 2012.
- *Finalist for NTF Best Paper Award* at the Int. Conf. on Intelligent Robots and Systems (IROS), St. Louis, MO, USA, 2009 (1698 papers).
- *Best Paper Award* at the 10th Int. Conf. on Simulation of Adaptive Behavior (SAB), Osaka, Japan, 2008.
- Post-doctoral fellowship for prospective researchers from the Swiss National Science Foundation, 2007.
- Nominated for the 2008 EPFL best PhD-thesis award.
- Dean’s Recognition, I&C School, EPFL for exceptional performance in 2007.
- *Best Paper Award* at the 8th International Symposium on Distributed Autonomous Robotic Systems, Minneapolis, Minnesota, USA, 2006.

Awards to student collaborators:

- “Outstanding Research Award” (Department of Computer Science) to PhD students Radhen Patel (2017), Yang Li (2017), Dana Hughes (2016), Halley Profita (2016), Andy McEvoy (2015), and Erik Komendera (2014).
- “Ralph J. Slutz Award” for research excellence to PhD student Dana Hughes (2017, 2015) and Nicholas Farrow (2016).
- Lemelson MIT award to PhD student Heather Hava, 2016
- “*1st place (graduate teams)*” and “*Best Advanced Concept*” at the 2013 NASA/NIA Revolutionary Aerospace Systems Concepts Academic Linkage (RASC-AL) competition (Faculty advisor)

## FUNDING

---

Grants after 2016 indicate “CU Boulder” or “Robotic Materials Inc.” as the grantee institution.

## FUNDED RESEARCH

### Grants as leading principal investigator

1. \$125,000 “Programming-Free Manipulation-in-the-Box Solution for Autonomous IVA”, NASA, Nikolaus Correll (PI), 2020, Robotic Materials Inc.
2. \$400,000 “Easy-to-use, Autonomous Bin-picking and Assembly Operations for the Manufacturing Industry”, NIST, Nikolaus Correll (PI), 2020–2021, Robotic Materials Inc.
3. \$815,992 “SBIR Phase II: Gripper-integrated proximity, contact and force sensing for collaborative robots”, NSF, Nikolaus Correll (PI), 2019–2020, Robotic Materials Inc.
4. \$100,000 “Easy-to-use, Autonomous Bin-picking and Assembly Operations for the Manufacturing Industry”, NIST, Nikolaus Correll (PI), 2019, Robotic Materials Inc.
5. \$225,000 “SBIR Phase I: Whole-body 3D perception for human-safe collaborative robots”, NSF, Nikolaus Correll (PI), 2019–2020, Robotic Materials Inc.
6. \$225,000 “ SBIR Phase I: Gripper-integrated proximity, contact and force sensing for collaborative robots”, NSF, Nikolaus Correll (PI), 2017–2018, Robotic Materials Inc.
7. \$94,000 “Next-generation autonomous manipulation for collaborative robotics”, Advanced Industries Accelerator (AIA) grant (State of Colorado) with matching funds from CU Boulder’s Technology Transfer Office, N. Correll (PI), 2017–2018, CU Boulder.
8. \$20,000 “Workshop on Robotic Materials”, N. Correll (PI), ARO and AFOSR joint funding, co-organized with R. Shepherd (Cornell) and K. Pister (Berkeley), 2016, CU Boulder.
9. \$62,411, NIST, “High-DOF Planning for Assembly Processes”, subcontract to South West Research Institute, PI: Shaun Edwards, 2016–2017.
10. \$504,521, AFOSR, Distributed Algorithms for Stiffness and Shape Changing Computational Meta-Materials, Correll (PI), 2015–2018.

11. \$8,000 REU (Research Experience for Undergraduates) Supplement to NSF CAREER (1 year) from the NSF, 2014.
12. \$49,945 “Exploring a Uniform Modeling Framework for Material-centric, Morphological Computation”, Correll (PI) from ARO, 2014.
13. \$259,634 “Assistive wearable technology for the deaf based on a modular networking architecture supporting high-bandwidth sensing and distributed control”, Correll (PI), Richard Han (Co-I, consulting share), from DARPA TTO, 2014.
14. \$11,000 REU (Research Experience for Undergraduates) Supplement to “NRI-Large: Collaborative Research: Soft Compliant Robotic Augmentation for Human-Robot Teams” (1 year) from the NSF, 2013.
15. \$600,000 “Autonomous Food Production”, NASA Early Career Fellowship from NASA, 2012-2015. (Excludes \$20,000 cost sharing provided by the CS department.), 2012-2015.
16. \$23,935 “Career-Life Balance” supplement to NSF CAREER, 2012.
17. \$8,000 REU (Research Experience for Undergraduates) Supplement to “CAREER: Modeling and Design of Composite Swarming behaviors” (1 year) from the NSF, 2012-2013.
18. \$120,000 “EAGER: Centralized Control of Large-Scale Distributed Sensor/Actuator Networks: Self-organizing Amorphous Facades” from NSF, 2012-2013.
19. \$360,000 “Self-Assembly and Self-Repair of Structures with Stability and Resource Constraints” (3 year grant) from the Air Force Office of Scientific Research, 2012-2015.
20. \$533,645 “CAREER: Modeling and Design of Composite Swarming Behaviors” (5 year grant) from the National Science Foundation, 2012-2017.

### **Grants as co-investigator**

1. \$1,163,964 “NRI: INT: Autonomous Restoration and Revegetation of Degraded Ecosystems”, NSF, Christoffer Heckman (PI), Nikolaus Correll (Co-PI, 1/3rd share), Nichole Barger (Co-PI), 2020, CU Boulder.
2. \$360,000 (Correll’s share) “Localized and Rapid Variable Compliance Via Phase Changing Matter and Distributed Computation”, AFOSR, subcontract to Cornell University, Robert Shepherd (PI), 2017, CU Boulder.
3. \$1,400,000 “CPS: TTP Option: Medium: Synthetic, Distributed Sensing, Soft and Modular Tissue (sTISSUE)”, NSF, Mark Rentschler (PI), Nikolaus Correll (Co-PI, 1/4th share), Christoph Keplinger (Co-PI), Sean Humbert (Co-PI), 2017, CU Boulder.
4. \$125,000 “Dismantling Rubble Pile Asteroids with AoES (Area-of-Effect Soft-bots)”, NASA NIAC, Jay McMahon (PI), Kurt Maute (Co-PI) and Nikolaus Correll (Co-PI, consulting share), 2017, CU Boulder.
5. \$232,928 “EAGER: Paper Mechatronics: Creating High-Low Tech Design Kits to Promote Engineering Education”, PI: Sherry Hsi (UC Berkeley), Co-PIs: Mike Eisenberg and Nikolaus Correll, CU Boulder, from NSF. (Correll’s share \$10,000), 2014.

6. \$233,849 (Correll's share) "NRI-Large: Collaborative Research: Soft Compliant Robotic Augmentation for Human-Robot Teams", PI: Daniela Rus, MIT, Co-PIs: Nikolaus Correll, CU Boulder, Robert Wood, Harvard University, from NSF, 2012-2017.
7. \$12,000 (Correll's share) "Single-DOF STEM Arm" with Altius Space Machines (lead), Rocco LLC, Ecliptic Enterprises Corporation, ReliAscent LLC from DARPA, Phoenix Program, 2012.

#### POST-DOC AND STUDENT FELLOWSHIPS MANAGED BY THE PI

1. \$268,000 "Self-Assembly of Structures in Space" from NASA. NSTR fellowship awarded to Erik Komendera, 4 year grant.
2. \$270,000 "Improving Habitability, Mood & Diet through Bioregenerative Food Systems" from NASA. NSTR fellowship awarded to Heather Hava, 4 year grant.
3. \$269,156 "Guided Self-Assembly of Computational Robotic Materials" with Dustin Reishus, sub-recipient of an NSF grant awarded to the Computing Research Association, 2010-2012.

#### DENIED FUNDING (2017-)

1. \$30,000,000 "NSF Science and Technology Center for Animate Automata ( $A^2$ ):", NSF, Neil Gershenfeld, MIT (PI), Nikolaus Correll (CU Boulder, Co-PI), Z. Deng (Alabama A&M University, Co-PI), Santanu Chaudhuri (Argonne National Laboratory, Co-PI), Joel Cutcher-Gershenfeld (Brandeis, Co-PI), Julia Greer (Caltech, Co-PI), Hod Lipson (Columbia, Co-PI), Sean Megason (Harvard, Co-PI), John Glass (John Craig Venter Institute, Co-PI), Kelly Zelesnik (Lorain County Community College, Co-PI), Navajo Technical University (Partner), James Warren (NIST, Co-PI), Manu Prakash (Stanford, Co-PI), Michael Strocio (Univ of Illinois at Chicago, Co-PI), Kat Adamala (Univ of Minnesota, Co-PI), Adriana Schulz (Univ of Washington, Co-PI), February 2022.
2. \$800,000 "SBIR Phase I+II: Digitizing manufacturing floors for increasing COVID resilience", NIST, Nikolaus Correll (PI). Robotic Materials Inc. , February 2022.
3. \$20,000,000 "Collaborative Research: Expeditions: From Bits to Atoms: Physically Reconfigurable Computing Systems", NSF. Lead: Neil Gershenfeld, MIT. Correll share: \$1,025,000, February 2021.
4. \$1,000,000 "SBIR Phase II: Whole-body 3D perception for human-safe collaborative robots", NSF. Nikolaus Correll (PI), Robotic Materials Inc., June 2020.
5. \$1,491,337 "FW-HTF-RM: Communication and Interaction Design for Managing and Coordinating Human-Robot Teams", NSF. Bradley Hayes (PI), Nikolaus Correll (Co-PI), March 2020.
6. \$1,200,000 "RI:Medium:Contact- and proximity-informed robot control and planning through whole-body artificial skin", NSF. Alessandro Roncone (PI), Nikolaus Correll (Co-PI), Jianliang Xiao (Co-PI), September 2019.

7. \$1,109,249 “DMREF: Engineering functional multi-cellular materials using hybrid 3D printing and distributed computation”, NSF. Nikolaus Correll (PI), Robert MacCurdy (Co-PI), February 2019.
8. \$99,864 “Planning Grant: Engineering Research Center for Advancing Multifunctional Materials and Systems (CAMMS)”, NSF. Sean Shaheen (PI), Orit Peleg (Co-PI), Nicolaus Correll (Co-PI), David Blaauw (Co-PI, University of Michigan), Richard Voyles (Co-PI, Purdue University), June 2018.
9. \$2,000,000 “Electrically Actuated Synthetic Muscular Hydrostats with Bio-inspired Distributed Control”, S. Humbert (PI), N. Correll, C. Keplinger, R. Shepherd (Cornell), B. Kier (North Carolina), submitted to ONR 2018 MURI competition, Sam Stanton PM (ARO), November 2017.
10. \$2,000,000 “EFRI C3 SoRo Preliminary Proposal: An Engineering Design Methodology for Soft Vertebral Robots”, NSF. Mark Rentschler (PI), Rong Long (Co-PI), Christoffer Heckman (Co-PI), Nicolaus Correll (Co-PI), Kurt Maute (Co-PI), October 2017.
11. \$750,000 “NRI: FND: Robotic Skin: Ubiquitous Sensing for Manipulating Co-Robots”, NSF. Christoffer Heckman (PI), Nikolaus Correll (Co-PI), February 2017).

#### INVITED TALKS

1. “Toward smart composites: small-scale, untethered prediction and control for soft sensor/actuator systems”, National Workshop on Human-like Robots, Washington, DC, July 13, 2022
2. “Toward smart composites: small-scale, untethered prediction and control for soft sensor/actuator systems”, ARO Bioelectronics workshop, Austin, TX, May 23, 2022
3. “How to Digitize Your Factory to Optimize Revenue”, AmCon - Advanced Design and Manufacturing Expo, Orlando, FL, April 13, 2022
4. “Moving to Digital: Value Stream Mapping Leads Directly to Lean Continuous Improvement”, IME West, Anaheim, CA, April 12, 2022
5. “How to Digitize Your Factory to Optimize Revenue”, AmCon - Advanced Design and Manufacturing Expo, Bellevue, WA, MFebruary 21, 2022
6. “Robots getting a grip on generatl manipulation”, University of Utah, Robotics Seminar, October, 2021.
7. **Keynote Speaker, “Robots getting a grip on general manipulation” at the Int. Conf. on Intelligent Robots and Systems (IROS), Las Vegas, October 2020.**
8. “Bronze, Iron, Plastic age, how will the next material revolution look like?”, invited talk at the 17th Annual Conference on Foundations of Nanoscience: self-assembled architectures and devices (FNANO20), keynote talk.
9. “Materials that Make Robots Smart”, Technical University of Munich, July 2018.
10. “Materials that Make Robots Smart”, Samsung Strategy and Innovation Center, January 2018.

11. “Material-integrated Intelligence for Robot Autonomy”, Institute FEMTO-ST, CNRS, Université de la Franche-Comté, June, 2017.
12. ***Plenary Speaker at the Int. Symp. on Distributed Autonomous Robotic Systems, London, November 2016.***
13. “Material-integrated Intelligence for Robot Autonomy”, Department of Mechanical Engineering, University of Missouri at Columbia, October 21, 2016.
14. “Material-integrated Intelligence for Robot Autonomy”, NASA Biomimicry Summit and Education Forum, Cleveland, Ohio, August 3, 2016.
15. *Keynote Speaker* at the 3rd International Conference on System-Integrated Intelligence: New Challenges for Product and Production Engineering, Paderborn, Germany, June 2016.
16. “Material-integrated Intelligence for Robot Autonomy”, École Polytechnique Fédérale Lausanne (EPFL), June 22, 2016.
17. “Material-integrated Computation for Robot Autonomy”, University of California San Diego, ECE Department, March 31, 2016.
18. “Material-integrated Computation for Robot Autonomy”, Robotics Seminar Series, Northwestern University, February 29, 2016.
19. “Robotic Materials”, Robotic Seminar Series, Purdue University, October 30, 2015.
20. “From Swarm Robotics to Smart Materials”, International Conference on Mathematical Modeling and Applications (ICMMA), January 10, 2015, Tokyo, Japan.
21. “Robotic Materials”, Department of Civil and Mechanical Engineering, California Institute of Technology, December 4, 2014.
22. “Robotic Materials”, Sheffield Center for Robotics, University of Sheffield, November 21, 2014.
23. “Distributed Information Processing in Materials that Think”, NSF Workshop on Self-organizing Particle Systems at the ACM-SIAM Symposium on Discrete Algorithms (SODA), January 8, 2014.
24. “Distributed Information Processing in Materials that Think”, Department of Physics, CU Boulder, September 11, 2013.
25. “From swarm robotics to a ‘Liquid that thinks’”, TEDxPearlStreet at CU Boulder, March 21, 2013.
26. “From Swarm robotics to Smart Materials”, Ball Aerospace, Boulder, CO, March 1, 2013.
27. “From Personal Computers to Personal Robots — Challenges in Computer Science Education”, Computer Science Department, CU Boulder, October 4, 2012.
28. “Any-Com Multi-Robot Navigation” at the ONR China Lake multi-use technology symposium, May 24, 2012.
29. “Robotic Polycultures” at TEDx Frontrange in the Rialto theater in Loveland, CO, May 10th, 2012.

30. “Probabilistic Models for Cognition in Swarming Systems”, Institute for Cognitive Science, CU Boulder, April 9, 2012.
31. “Any-Com Multi-Robot Path-Planning”, Computer Science Department, University of Nebraska at Omaha, November 11, 2012.
32. “Robots in the Landscape”, at the “Technology and the Garden” Symposium, Dumbarton Oaks, Washington DC, May 7, 2011.
33. “Multi-level Modeling of Aggregation Dynamics”, Math department colloquium series, University of West Virginia, March 10, 2011.
34. “Building a Robot Garden”, University of Denver, September 24, 2009.
35. “Building a Robot Garden”, NSF HEMBI workshop, Media Laboratory, Massachusetts Institute of Technology, September 15, 2009.
36. “Networked Teams of Robots and Sensors: Theory and Practice”, Media Laboratory, Massachusetts Institute of Technology, July 15, 2009.
37. “Networked Teams of Robots and Sensors: Theory and Practice”, Department of Computer Science, University of Colorado at Boulder, April 9, 2009.
38. “Modeling and Design of Large-Scale Sensor-Actuator Networks”, Workshop on Multi-Robot Control, Technical University Munich, Munich, Germany, February 18, 2008.
39. “Coordination Schemes for Distributed Boundary Coverage with a Swarm of Miniature Robots: Synthesis, Analysis and Experimental Validation”, Self-Organizing Systems Research Group (Radhika Nagpal), Harvard University, Cambridge, MA, July 30, 2008.
40. “Distributed Robotics: From Science to Systems”, Willow Garage, Menlo Park, CA, May 28, 2008.
41. “Comparing Coordination Schemes for Distributed Boundary Coverage: Synthesis, Analysis, and Experimental Validation”, Informatik VI: Robotics and Embedded Systems, Technical University of Munich, Munich, Germany, October 16, 2007.
42. “Comparing Coordination Schemes for Distributed Boundary Coverage: Synthesis, Analysis, and Experimental Validation”, Abteilung Bildverstehen, Institut für Parallele und Verteilte Systeme, Stuttgart University, Stuttgart, Germany, October 15, 2007.
43. “Distributed Boundary Coverage using a Swarm of Miniature Robots”, Workshop on Autonomous Computing in Smart Environments, University of Fribourg, Switzerland, November 24, 2006.

## TEACHING

---

### CLASSES

Correll has developed the classes “Introduction to Robotics” (CSCI 3302) and “Advanced Robotics” (CSCI 4302) from special topic classes to core CS classes with continuously increasing enrollment.



- “Advanced Robotics”, CSCI 4302 (formerly “Special Topics in Computer Science”), Fall 2010, Spring 2011, Spring 2012, Spring 2013, Spring 2022 (27 students).
- “Introduction to Robotics”, CSCI 3302 (formerly “Special Topics in Computer Science”), Spring 2010, Fall 2010, Fall 2011, Fall 2013, Fall 2014, Fall 2015, Maymester 2016, Fall 3302 (63 students) Spring 2021 (104 students), Fall 2022 (103 students).
- “Introduction to Deep Learning”, CSCI7000, Spring 2020 (13 students)
- “CS1: Starting computing”, CSCI1300, Fall 2019, 194 students, Fall 2021, 245 students
- “Swarm Intelligence”, CSCI4830/CSCI7000, Spring 2016.
- “Robotic Materials”, CSCI7000, Fall 2014.
- “Materials that think”, GEEN1400, Spring 2014, Spring 2015, Spring 2018 (with international component in Germany)
- “Multi-Robot Systems”, Special topics in CS course (Boulder), Fall 2009
- “The Distributed Robotics Garden”, undergraduate and graduate credits in MIT’s course 6 (EECS) with Prof. D. Rus, Fall 2008

#### POST-DOCS

- Past (2): Dr. Timothy Caldwell (September 2013-September 2015), now at Zoox. Dr. Dustin Reishus (September 2010-July 2013), now at Google.

#### PHD STUDENTS

- Dr. Hong Truong, Spring 2022, PhD Thesis: “Techniques to Leverage Potential-based Mechanisms in Human-centered Sensing Systems”, then instructor at the Department of Computer Science at CU.
- Dr. Heather Hava, Spring 2022, PhD Thesis: “Development and application of a living systems centered design framework, to improve habitability, diet, well-being, crew performance and automation strategies”.
- Dr. Sarah Aguasvivas Manzano, Spring 2022, PhD Thesis: “Material-integrated Prediction, Control, and Distributed Learning in Soft Robots”, then scientist at Apple Inc.
- Dr. Khoi Ly, Spring 2022, PhD Thesis: “Embedded Sensing and Control for High-Speed Electrohydraulic Soft Robots”, then Post-Doc at Cornell University.
- Dr. Radhen Patel, Spring 2019, PhD Thesis: “Tactile fingertips for robotics and prosthetics”, then Post-Doc at MIT.
- Dr. Yang Li, CS, Spring 2019, PhD Thesis: “Artificial Camouflage: mechanisms and algorithms” then at Waymo.
- Dr. John Klingner, CS, Fall 2018, PhD Thesis: “Distributed and Decentralized Algorithms for Functional Programmable Matter”, then at Canvas Technologies / Amazon Robotics.

- Dr. Dana Hughes, CS, Spring 2018, PhD Thesis: “In-material Processing of High Bandwidth Sensor Measurements using Modular Neural Networks”, then post-doc at Carnegie Mellon University, now project scientist at CMU.
- Dr. Andy McEvoy, CS, Spring 2017, PhD Thesis: “Shape-changing robotic materials using variable stiffness elements and distributed control”, then at MDA Systems.
- Dr. Halley Profita, CS, Spring 2017, PhD Thesis: “Designing Wearable Assistive Computing Devices to Support Social Acceptability and Personal Expression” (co-advised with Prof. Shaun Kane), then at Apple Inc.
- Dr. David Coleman, CS, Fall 2016, PhD Thesis: “Methods for Improving Motion Planning Using Experience”, then founder at PickNik Inc.
- Dr. Anshul Kanakia, CS, Fall 2015, PhD Thesis: “Optimal Task-Assignment in Multi-Agent Systems”, then at Microsoft Research.
- Dr. Erik Komendera, CS, Fall 2014, PhD Thesis: “Precise Assembly of Truss Structures by Distributed Robots”, then scientist at NASA Langley research center, now Assistant Professor at Virginia Tech.
- Dr. Jaeheon Jeong, CS, Spring 2014, PhD Thesis: “A divide-and-conquer approach for Visual Odometry with minimally-overlapped multi-camera setup” (previous advisor Prof. Jane Mulligan).
- Dr. Michael Otte, CS, Fall 2011, PhD Thesis: “Any-Com Multi-Robot Path Planning”, then Post-Doc at MIT, now Assistant Professor at the University of Maryland (Aerospace Engineering).

Current (1): James Watson (Fall 2018-)

#### MASTER’S THESIS SUPERVISION

Stephen Otto (Fall 2022-), Scott Scheraga (Fall 2020-Fall 2021), Mohammad Hashemi (Fall 2017-Spring 2018), Rebecca Cox, (Fall 2016-Spring 2017), John Lammie, (Fall 2016-Spring 2017), Jorge Cañardo Alastuey (Fall 2015 - Summer 2016), Daniel Zukowski (Fall 2015-Spring 2016), Rowan Wing (Fall 2013-Spring 2014), Akshay Mysore (Fall 2013-Spring 2014), Ayman Omar Hamuda (2013), Vijeth Rai (Fall 2010 - Fall 2011 ).

#### UNDERGRADUATE RESEARCH SUPERVISION

Dylan Kriegman (Senior Thesis, Fall 2022-), Joshua Dinerman (Summer 2022), Joseph Vasse and Jean Dinet (visiting from University of Bourgogne-Franche-Comte, Spring 2018), Branden Romero (Spring 2017), Florian Pescher (visiting from Supelec Metz, Spring 2017), Lauren McIntire (Spring 2016-Fall 2016), Audrey Randall (Spring 2016-Fall 2016), Regina Jingwen (Spring 2016-Fall 2016), Lauren McIntire (Spring 2016-Fall 2016), Cory Morales (Summer 2015), Parker Evans (Fall 2014), Blake Reimer (Summer 2014-Fall 2014), Ariel Hoffman (Fall 2013-Spring 2014, DLA/NSF REU), Xingjie Zhong (Fall 2013-Spring 2014, DLA/NSF REU), Samuel Beckett (Summer 2012, NSF DREU), Michael Beam (Fall 2012, NSF REU), Britta Ulm (Fall 2012, NSF REU), Henrey

Horseley (Summer 2012, NSF REU, Oberlin college), Christopher Johnson (Summer 2012, NSF REU), Brian McDonald (Fall 2009-Fall 2010, UROP), Joseph Maniaci (Fall 2009, UROP), Daniel Sutton (Senior thesis, 2009-2010).

#### HIGHSCHOOL INTERNS

Sarah Radzihovsky (Summer 2014/2015) then at Stanford University, Eliza Cornell (Summer 2013) then at Stanford University, Naren Dasan (Summer 2013) then at University of Illinois at Urbana Champaign

#### SERVICE

---

#### CONFERENCE ORGANIZATION

- Award chair, International Symposium on Distributed Autonomous Robotic Systems (DARS), 2021.
- *General chair*, International Symposium on Distributed Autonomous Robotic Systems (DARS), 2018.
- *Main Organizer*, 2nd Workshop on Robotic Materials, Keck Center at the National Academy of Science, Washington, D.C., sponsored by the Computing Community Consortium / Computing Research Association, April 2018
- *Main Organizer*, Workshop on Robotic Materials, University of Colorado at Boulder, with Rob Shepherd, Cornell, and Kris Pister, Berkeley, sponsored by ARO/AFOSR/CU in March, 2017.
- Social committee, Gordon Conference on Multi-functional Materials and Structures, 2016.
- Technical Program Co-Chair for the International Conference on Nano-Networks (NANO-NETS), Boston, 2008, 2009.

#### INTERNAL

- Member of the CS department's ABET task force lead by Richard Han
- Search committee member "Robotics", Fall 2016, Department of Computer Science
- Search committee member "Controls" Fall 2013, Department of Electrical Engineering
- Search committee member "Cyber-Physical Systems" Spring 2013, Fall 2013, Department of Computer Science
- Founding member of the "Material Science Engineering" task force at CU led by Prof. Christopher Bowman.
- Graduate Committee member 2009-2012.

## EDITING

- Publication Chair, International Conference on Distributed Autonomous Robotic Systems (DARS), 2010, published as monograph in the “Springer Tracts on Advanced Robotics” series.
- Guest Editor, Neural Computing and Applications, Springer Verlag. Special issue on Swarm Robotics (with Roderich Gross), 2010.

## SESSION CHAIR

- Discussion Leader, Gordon Conference on Multi-functional Materials, Spring 2018
- Multifunctional Composites Symposium 8 at the 19th International Conference on Composite Materials (ICCM), 2013.
- International Conference on Robotics and Automation (ICRA), 2008, 2014.
- Poster Spotlight Session on “Evolution” and “Cognition, Emotion and Behaviour” at the International Conference on Simulation of Adaptive Behavior (SAB), 2008.

## PROGRAM COMMITTEE

- Associate Editor, International Conference on Intelligent Robots and Systems (IROS), 2011, 2012, 2013, 2015, 2016.
- Associate Editor, International Conference on Robotics and Automation (ICRA), 2010, 2011, 2012, 2014, 2015, 2016.
- Distributed Autonomous Robotic Systems (DARS), 2008, 2012, 2014, 2016.
- Simulation of Adaptive Behavior (SAB), 2008, 2010, 2012, 2016
- Spatial Computing Workshop at AAMAS 2013.
- MoNaCom Workshop at INFOCOMM 2011.
- Autonomous Agents and Multi-Agent Systems (AAMAS), 2010, 2011, 2012.
- IEEE Swarm-Intelligence Symposium (SIS), 2005.

## REVIEW (SELECTION)

- **Government** National Science Foundation, Airforce Office of Scientific Research, Army Research Office, Swiss National Science Foundation, French Research Commission, Helmholtz Gesellschaft (German).
- **Books** MIT Press, Princeton University Press.

- **Journals** ACM Transactions on Sensor Networks, Advanced Materials (Wiley-VCH), ASME Transactions on Mechatronics, Robotics and Autonomous Systems (Elsevier), Adaptive Control and Signal Processing (Wiley), Autonomous Agents and Multi-Agent Systems (Springer), IEEE Robotics and Automation Magazine, IEEE Transactions on Robotics (IEEE press), Intelligent Service Robotics (Springer), Interaction Studies (John Benjamins Publishing Company), International Journal of Robotics Research (Sage), Science (AAAS), Science Robotics (AAAS), Swarm-Intelligence (Springer Verlag), Robotica (Cambridge University Press), Nature (Springer Nature).
- **Conferences** American Control Conference (ACC), International Joint Conference on Autonomous Agents and Multiagent Systems (AAMAS), IEEE Conference on Automation Science and Engineering (CASE), IEEE Conference on Decision and Control (CDC), IFRR Int. Conf. on Field and Service Robotics (FSR), IEEE International Conference on Robotics and Automation (ICRA), IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS).

## MEDIA COVERAGE AND PUBLIC APPEARANCE (SELECTION)

---

Correll's work receives extensive media coverage in press, film, and online outlets including the Associated Press, Discovery channel, Popular Mechanics, NY Times, The Economist, and Colorado Public Radio, as well as CU publications including "CU Engineering Magazine", "CU Connections" and "Spotlight on Research". A more comprehensive list with hyperlinks is available online<sup>1</sup>.

## ARTICLES IN THE POPULAR PRESS (SELECTION)

1. N. Correll. Crowdfunding of science leads to innovation and better public engagement. A. Rathi (Ed.): The Conversation (UK), 2014.
2. N. Correll. Space exploration can drive the next agricultural revolution. The Conversation (UK), 2013. Syndicated on space.com, phys.org and others.

## PRESS (SELECTION)

1. "This Skateboard folds in half to stow in a backpack thanks to the power of air pressure", by Alexandra Ossola, Popular Science, June 30, 2015
2. "Next-Generation Robots Offer Sophisticated Mobility, Manipulation, and Sensing Capabilities", by John Edwards, IEEE Signal Processing Magazine, September, 2013.
3. "Der Automat als Herdentier" by Helga Rietz, Neue Zuercher Zeitung, June 26, 2013.
4. "Menu for Mars", CU Engineering Magazine, April 2013.
5. "CU Boulder Team to work on space food project" by B. Anas, The Daily Camera, 06/04/2012.

---

<sup>1</sup>[http://correll.cs.colorado.edu/?page\\_id=146](http://correll.cs.colorado.edu/?page_id=146)

6. “CU Boulder ‘Swarm Wall’ the product of art, robotics” by B. Anas, *The Daily Camera*, 06/01/2012.
7. “Ping Pong Ball-Sized Robots Can Swarm Together To Form A Smart Liquid” by Rebecca Boyle, *Popular Science*, December 18, 2012.
8. “CU Boulder ‘Swarm Wall’ the product of art, robotics” by B. Anas, *The Daily Camera*, June, 2012.
9. “3 New Farm Bots Programmed to Pick, Plant, and Drive” by Erik Sofge, *Popular Mechanics*, September, 2009.
10. “Robogardner” by MIT News Staff, *MIT Technology Review*, May/June, 2009.
11. “I, robot - and gardener: MIT droid tend plants”, by Melissa Trujillo, Associated Press (worldwide syndication), April 10, 2009.
12. “In an Age of Robots, One to Clean the House? Still but a Dream” by Natalie Angier. *New York Times*, November 24, 2008.
13. “Swarm Theory”, by Peter Miller. *National Geographic*, July 2007, National Geographic Society, Washington, DC, USA.
14. “New SWIS Army - Developing collective intelligence”, by Bill Weaver. *Scientific Computing*, July 2006, Advantage Business Media, Rockaway, NJ, USA.
15. “L’intelligence collective des robots”, *Sciensationnel - Cerveau et Conscience*, No. 5. EPFL outreaching magazine for young scientists.

#### FILM AND TELEVISION (SELECTION)

1. “Advances in Robotic Materials stuck in lab” by Peter Banda, The Associated Press (video), syndicated by TV stations and online outlets across the US.
2. “Robots are taking over the garden” by L. Clarizio, The American Institute of Physics and Ivanhoe Productions, broadcasted as a segment of “Discoveries and Breakthroughs Inside Science” on TV stations throughout the US.
3. “Super-Cockroach”, by Pascal Cuissot and Benjamin Turquet, 52min. International broadcast in various broad-public scientific programmings.
4. “Les robots cherchent la petite bête”, by Emmanuelle Jacquet, 2006. 5min, Tele Suisse Romande/Nuovo. Public broadcast in Switzerland and Belgium (TV5).
5. “Alice au pays des cafards / Wenn Kakerlaken Freunde werden”, by Jean-Pierre Gibrat, 2006. 52min, Trans Europe Film, ARTE France/Germany, CNRS Images/Media. Public broadcast in France and Germany.

## EXHIBITIONS

1. “Endo-Exo”, a 33x12 feet kinetic sculpture designed by Michael Theodore using hardware developed in Correll’s lab was exhibited in David B. Smith’s gallery in Denver for one month during May to June 2013.
2. The “Swarm Wall”, a 40x12 feet installation designed by Michael Theodore and using hardware developed in Correll’s lab, was exhibited in CU’s Art Museum for one month from June to July 2012.
3. The inspection experiment (PhD thesis work) was featured 10 days long running 20 robots for 10 hours a day at an exhibition “Consciences l’oeuvre” taking place in a museum in Lausanne during the Swiss wide festival “Science et Cite” 2005, organized every four years.

## PUBLICATIONS

---

Stars (\*) next to an author's name indicate CU graduate students, a plus sign (+) indicates undergraduate students or highschool interns.

### BOOKS

1. N. Correll, Bradley Hayes, Christoffer Heckman and Alessandro Roncone. "Introduction to Autonomous Robots: Mechanisms, Sensors, Actuators and Algorithms", MIT Press, to appear 2022.

### EDITED BOOKS, JOURNALS, AND FOREWORDS

1. "Interview with Nikolaus Correll: Robotic Materials", N Correll, Michael Friedman, Karin Krauthausen, *Active Materials*, p. 173, De Gruyter, 2021.
2. Michael Otte\*, Mac Schwager and N. Correll. *Proceedings of the 14th Symposium on Distributed Autonomous Robotic Systems*, Springer Proceedings on Advanced Robotics (SPAR), Springer Verlag, Heidelberg, 2019, DOI: 10.1007/978-3-030-05816-6.
3. N. Correll. Foreword to "Material-integrated Intelligent Systems: Sensorial Materials, Adaptive Metacomposites and the fundamentals of realizing material-integrated intelligence" by Stefan Bosse, Manuel Collet, Dirk Lehmhus, Walter Lang, and Matthias Busse, Wiley-VCH, March, 2018.
4. A. Martinoli, Francesco Mondada, N. Correll, G. Mermoud, M. Egerstedt, M. Ani Hsieh, L. Parker, K. Støy. *Distributed Autonomous Robotic Systems: The 10th International Symposium (Springer Tracts in Advanced Robotics)*, 636 pages, Springer, 2013.
5. N. Correll and Roderich Gross. Special Issue on Swarm Robotics, *Springer Neural Computing & Applications Journal* 19(6), 2010.

### PEER-REVIEWED JOURNAL ARTICLES

1. V. Sundaram, K. Ly\*, B. Johnson, M. Naris, M. Anderson, S. Humbert, N. Correll, M. Rentschler. Embedded Magnetic Sensing for Feedback Control of Soft HASEL Actuators. *IEEE Transactions on Robotics*, 2022.
2. S. Aguasvivas Manzano\*, V. Sundaram, A. Xu, K. Ly\*, M. Rentschler, R. Shepherd, and N. Correll. Toward smart composites: small-scale, untethered prediction and control for soft sensor/actuator systems. *Journal of Composite Materials*, 2022.
3. S. Batra<sup>+</sup>, J. Klingner\*, N. Correll. "Augmented reality for human-swarm interaction in a swarm-robotic chemistry simulation", *Artificial Life and Robotics*, pages 1–9, 2022.
4. K. Ly\*, J. Mayekar\*, S. Aguasvivas\*, C. Keplinger, M. Rentschler, N. Correll. "Electro-Hydraulic Rolling Soft Wheel: Design, Hybrid Dynamic Modeling, and Model Predictive Control". *IEEE Transactions on Robotics*, pp. 1–20, 2022.



5. K. Ly\*, N. Kellaris, D. McMorris, B. K Johnson, E. Acome, V. Sundaram, M. Naris, J. Humbert, M. Rentschler, C. Keplinger, N. Correll. Miniaturized circuitry for capacitive self-sensing and closed-loop control of soft electrostatic transducers. *Soft Robotics*, 8 (6), pp. 673–686, 2021.
6. M. Roa, M. Dogar, J. Pages, C. Vivas, A. Morales, N. Correll, M. Gerner, J. Rosell, S. Foix, R. Memmesheimer, F. Ferro. Mobile Manipulation Hackathon: Moving into Real World Applications, pp. 112–124, *IEEE Robotics & Automation Magazine*, 2021.
7. H. Hava\*, L. Zhou, C. Mehlenbeck, A. King, E. Lombardi, K. Baker, A. Kaufman, and N. Correll. SIRONA: Sustainable Integration of Regenerative Outer-space Nature and Agriculture. Part 2—design development and projected performance. *Acta Astronautica*, DOI: 10.1016/j.actaastro.2020.07.001. 2020.
8. B. Johnson, V. Sundaram, M. Naris, E. Acome, K. Ly\*, N. Correll, C. Keplinger, J. Humbert and M. Rentschler. Identification and Control of a Nonlinear Soft Actuator and Sensor System. *IEEE Robotics and Automation Letters*, 5 (3), pp. 3783–3790, 2020.
9. J. Watson\*, A. Miller and N. Correll. Autonomous industrial assembly using force, torque, and RGB-D sensing. *Advanced Robotics*, 34 (7-8), pp. 546–559, 2020.
10. F. von Drigalski, C. Schlette, M. Rudorfer, N. Correll, J. Triyonoputro, W Wan, T. Tsuji, T. Watanabe. Robots assembling machines: learning from the World Robot Summit 2018 Assembly Challenge. *Advanced Robotics*, 34 (7–8), pp. 408–421, 2020.
11. J. Klingner\*, N. Ahmed, and N. Correll. Fault-Tolerant Covariance Intersection for Localizing Robot Swarms. *Robotics & Autonomous Systems*, 122, p.103306, 2019.
12. D. Hughes\*, C. Heckman, and N. Correll. Materials that Make Robots Smart. *International Journal of Robotics Research*, DOI: 10.1177/0278364919856099, 38(12–13), pp.1338–1351, 2019.
13. J. Segil, R. Patel\*, J. Klingner\*, R. Weir and N. Correll. Multi-Modal Fingertip Sensor with Proximity, Contact, and Force Localization Capabilities. Special issue on Collaborative and Controllable Robotics for Biomedical and Industrial Applications, *Advances in Mechanical Engineering*, 2019, Vol. 11(4), pp. 1–9, DOI: 10.1177/1687814019844643.
14. A. McEvoy\* and N. Correll. Shape-changing materials using variable stiffness and distributed control. *Soft Robotics*. 5(6), pp.737-747, 2018.
15. Y. Li\*, J. Klingner\*, and N. Correll. Distributed Camouflage for Swarm Robotics and Smart Materials. *Autonomous Robots*, 42(8), pp.1635-1650, 2018.
16. R. Patel\*, R. Cox\*, and N. Correll. Integrated proximity, contact and force sensing using elastomer-embedded commodity proximity sensors. *Autonomous Robots*, 42(7):1443-1458, 2018.
17. M. Otte\* and N. Correll. Dynamic teams of robots as ad hoc distributed computers: reducing the complexity of multi-robot motion planning via subspace selection. *Autonomous Robots*, 42(8), pp.1691-1713, 2018.
18. D. Hughes\*, J. Lammie\*, N. Correll. A robotic skin for collision avoidance and affective touch recognition. *Robotics & Automation Letters* 3 (3), pp. 1386–1393, 2018.

19. Y. Menguc, N. Correll, R. Kramer and J. Paik. Will robots be bodies with brains or brains with bodies? *Science Robotics*, 2:12, eaar4527 (2 pages), 2018.
20. H. Profita\*, M. Lightner, N. Correll, S. Kane. Textile-Based Assistive Wearables. *The Journal on Technology and Persons with Disabilities*, 40–49, April, 2017.
21. R. Shepherd, N. Correll, S. Morin, B. Mosadegh, C. Onal, K. Petersen, P. Polygerinos, M. Cianchetti, and M. Tolley. Soft robotics: Review of Fluid-Driven Intrinsically Soft Devices; manufacturing, sensing, control, and Applications in Human-Robot Interaction. *Advanced Engineering Materials*, 19(12), p.1700016, 2017.
22. D. Hughes\*, H. Profita\*, S. Radzihovsky+ and N. Correll. Intelligent RF-Based Gesture Input Devices Implemented using e-Textiles. *Sensors* 17(2):219, doi:10.3390/s17020219, 19 pages, 2017.
23. H. McCreery\*, N. Correll, M. Breed, S. Flaxman. Consensus or deadlock? Consequences of simple behavioral rules for coordination in group decisions. *PLOS One* 11(9):e0162768, 2016, 20 pages.
24. N. Correll, K. Bekris, D. Berenson, O. Brock, A. Causa, K. Hauser, K. Okada, A. Rodriguez, J. Romano, and P. Wurman. Analysis and Observations From the First Amazon Picking Challenge. *IEEE Transactions on Automation Science and Engineering*, 10.1109/TASE.2016.2600527, 2016.
25. A. Kanakia\*, B. Touri and N. Correll. Modeling multi-robot task allocation with limited information as global game. *Swarm Intelligence*, 10(2):147–160, 2016.
26. D. Hughes\* and N. Correll. Texture Recognition and Localization in Amorphous Robotic Skin. *Bioinspiration & Biomimetics*, Special issue on Bioinspired Soft Robotics, 10(5):055002 (16 pages), 2015.
27. Erik Komendera\*, N. Correll. Precise Assembly of 3D Truss Structures Using MLE-based Error Prediction and Correction. *International Journal of Robotics Research*, Special issue on ISER 2014, 34(13):1622–1644, 2015.
28. H. Hosseinmardi\*, A. Mysore\*, N. Farrow\*, N. Correll and R. Han. Distributed Spatio-Temporal Gesture Recognition. *ACM Transactions on Autonomous and Adaptive Systems*, 10(3):17 (19 pages), 2015.
29. A. McEvoy\* and N. Correll. Materials that couple sensing, actuation, computation and communication. *Science*, 347(6228) (9 pages), 2015.
30. D. Coleman\*, I. Sucas, S. Chitta, N. Correll. Reducing the Barrier to Entry of Complex Robotic Software. *Journal of Software Engineering in Robotics*, 5(1):3–16, Special issue on Best Practice in Robot Software Development, 2014.
31. M. McEvoy\* and N. Correll. Thermoplastic Variable Stiffness Composites with Embedded Sensing, Actuation, Communication and Control. *Journal of Composite Materials*, 49(15):1799–1808, 2014.
32. Erik Komendera\*, D. Reishus, N. Correll (2013): Precise Truss Assembly using Commodity Parts and Imprecise Welding. *Intelligent Service Robotics*, Special Issue on IEEE International Conference on Technologies for Practical Robot Applications (TEPRA), 7(2):93–102.

33. Michael Otte\* and N. Correll. C-FOREST: Parallel Shortest-Path Planning with Super Linear Speedup. *IEEE Transaction on Robotics*, 29(3):798–806, 2013.
34. N. Correll, R. Wing\* and D. Coleman\*. A One Year Introductory Robotics Curriculum for Computer Science Upperclassmen. *IEEE Transactions on Education* 56(1):54-60. Special Issue on Robotics Education. Taskin Padir and Sonja Chernova, editors, 2013.
35. N. Correll and A. Martinoli. Modeling Self-Organized Aggregation Dynamics. *International Journal of Robotics Research*, Special Issue on Stochasticity in Robotics and Biological Systems. Harry Asada and Vijay Kumar, editors. 30(5):615-626, 2011.
36. A. Prorok, N. Correll and A. Martinoli. Multi-level Spatial Modeling for Swarm-Robotic Systems. *International Journal of Robotics Research*, Special Issue on Stochasticity in Robotics and Biological Systems. Harry Asada and Vijay Kumar, editors. 30(5):574-589, 2011.
37. N. Correll, N. Arechiga, A. Bolger, M. Bollini, B. Charrow, A. Clayton, F. Dominguez, K. Donahue, S. Dyar, L. Johnson, H. Liu, A. Patrikalakis, T. Robertson, J. Smith, D. Soltero, M. Tanner, L. White, D. Rus. Indoor Robot Gardening: Design and Implementation. *Intelligent Service Robotics*. Special Issue on Robotics in Agriculture. 3(4):219-232, 2010.
38. N. Correll and D. Rus. Peer-to-Peer Learning in Robotics Education: Lessons from a Challenge Project Class<sup>2</sup>. *ASEE Computers in Education Journal*. Special Issue on Novel Approaches in Robotics Education. 1(3):60-66, 2010.
39. S. Rutishauser, N. Correll, and A. Martinoli. Collaborative Coverage using a Swarm of Networked Miniature Robots. *Robotics & Autonomous Systems*. 57(5):517-525, 2009.
40. P. Amstutz, N. Correll, and A. Martinoli. Distributed Boundary Coverage with a Team of Networked Miniature Robots using a Robust Market-Based Algorithm. *Annals of Mathematics and Artificial Intelligence*. Special Issue on Coverage, Exploration, and Search, Gal Kaminka and Amir Shapiro, editors, 52(2-4):307-333, 2009.
41. N. Correll and A. Martinoli. Towards Multi-Robot Inspection of Industrial Machinery — From Distributed Coverage Algorithms to Experiments with Miniature Robotic Swarms. *IEEE Robotics & Automation Magazine*. 16(1):103-112, 2008.
42. J. Halloy, G. Sempo, G. Caprari, C. Rivault, M. Asadpour, F. Tâche, I. Saïd, V. Durier, S. Canonge, J.M. Amé, C. Detrain, N. Correll, A. Martinoli, F. Mondada, R. Siegwart, and J.L. Deneubourg. Social integration of robots in groups of cockroaches to control self-organized choice. *Science* 318(5853): 1155-1158, 2007.

#### PEER-REVIEWED CONFERENCE PAPERS

1. H. Truong\*, N. Correll, and J. Segil. “Distributed Tactile Sensors for Palmar Surfaces of Prosthetic Hands”. *11th International IEEE/EMBS Conference on Neural Engineering (NER)*, 2023, under review.
2. B. Pulver, S. Aguasvivas Manzano\*, A. Selnick, S. Kishek, L. Sliker, N. Correll, J. Segil. “Toward Semi-autonomous prosthetic hand control: applying embedded neural networks to improve sensor fusion in prosthetic fingertip sensors”. *Myoelectric Controls and Upper Limbs Prosthetic Symposium (MEC22)*, 2022.

3. S. Aguasvivas\*, D. Hughes\*, C. Simpson<sup>+</sup>, R. Patel\*, and N. Correll. Embedded Neural Networks for Robot Autonomy. In *Proceedings of Int. Symposium on Robotics Research*, Hanoi, Vietnam, October, 2019. Springer Tracts on Advanced Robotics, pp. 589–599, 2022.
4. J. Klingner\*, N. Ahmed and N. Correll. Fault-Tolerant Covariance Intersection for Localizing Robot Swarms. In Proc. of the Int. Symp. on Distributed Autonomous Robotic Systems (DARS), pages 485–479, Boulder, CO, 2018.
5. C. Schunk, L. Pearson, E. Acome, T. Morrissey, N. Correll, C. M. Keplinger, M.E. Rentschler, J.S. Humbert, “System Identification and Closed-Loop Control of a Hydraulically Amplified Self-Healing Electrostatic (HASEL) Actuator”, IEEE International Conference on Intelligent Robots and Systems, Madrid, Spain, October, 2018.
6. N. Correll and C. Heckman. Materials that Make Robots Smart. In *International Symposium on Robotics Research (ISR)*, Puerto Varas, Chile, 2017. **1st price, Blue Sky track.**
7. R. Han, N. Correll, K. Pister, P. Dutta. Wireless Robotic Materials. In *15th ACM Conference on Embedded Networked Sensor Systems (SenSys)*, Delft, The Netherlands, 2017.
8. D. Hughes\*, A. Krauthammer<sup>+</sup> and N. Correll. Recognizing Social Touch Gestures using Recurrent and Convolutional Neural Networks. *Int. Conf. on Robotics and Automation (ICRA)*, pp. 2315-2321, 2017.
9. N. Farrow\*, L. McIntire<sup>+</sup> and N. Correll. Functionalized Textiles for Interactive Soft Robotics. *Int. Conf. on Robotics and Automation (ICRA)*, pp. 5525-5531, 2017.
10. R. Cox and N. Correll. Merging Local and Global 3D Perception using Contact Sensing. AAAI Spring Symposium on Interactive Multi-Sensory Object Perception for Embodied Agents, Stanford, CA, 2017.
11. Y. Li, J. Klingner, N. Correll. Distributed Camouflage for Swarm Robotics and Smart Materials. Distributed Autonomous Robotic Systems (DARS), London, UK, 2016. *Acceptance rate <25% (presented in full) Nominated for Best Paper Award*
12. D. Hughes, N. Correll. Distributed Convolutional Neural Networks for Human Activity Recognition in Wearable Robotics. Distributed Autonomous Robotic Systems (DARS), London, UK, 2016. *Acceptance rate <25% (presented in full) Nominated for Best Paper Award*
13. A. Randall<sup>+</sup>, J. Klingner\*, and N. Correll. Simulating Chemical Reactions using a Swarm of Miniature Robots. Submitted to Int. Conf. on Simulation of Adaptive Behavior (SAB), 2016, 12 pages. *Acceptance rate  $\approx$  40%.*
14. Radhen Patel\* and N. Correll. Integrated force and distance sensing for robotic manipulation using elastomer-embedded commodity proximity sensors. “Robotics: Science and Systems” (RSS), 2016, 10 pages. *Acceptance rate  $\approx$  20%. Finalist for “Best Paper” and “Best Student Paper” Award*
15. M. McEvoy\* and N. Correll. Distributed Inverse Kinematics for Shape-Changing Robotic Materials . In: 3rd International Conference on System-integrated Intelligence: New Challenges for Product and Production Engineering , Paderborn, Germany, 2016, 8 pages. *Acceptance rate 55%. Best Paper Award*

16. D. Hughes\*, N. Farrow\*, H. Profita\* and N. Correll. Detecting and Identifying Tactile Gestures using Deep Autoencoders, Geometric Moments and Gesture Level Features. ACM Int. Conf. on Multimodal Interaction, Recognition of Social Touch Gestures Challenge, Seattle, November, 2015, pages 415–422. *Acceptance rate*  $\approx$  20%.
17. T. Caldwell and N. Correll. Fast Sample-Based Planning of Dynamic Systems by Zero-Control Linearization-Based Steering. Int. Symposium on Robotics Research, Sestri Levante, Italy, September, 2015, 12 pages. *Acceptance rate* *n.a.*.
18. N. Farrow\* and N. Correll. A Self-Contained Soft Pneumatic Actuator that Can Sense Grasp and Touch. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Hamburg, Germany, September, 2015, pages 2317–2323. *Acceptance rate*  $\approx$  40%.
19. D. Coleman\*, I. Sucas, M. Moll, K. Okada, and N. Correll. Experience-Based Planning with Sparse Roadmap Spanners. IEEE International Conference on Robotics and Automation (ICRA), Seattle, May 2015, pages 900–905. *Accpt. rate* 41%.
20. L. Ma\*, M. Ghafarianzadeh\*, D. Coleman\*, N. Correll and G. Sibley. Simultaneous Localization, Mapping, and Manipulation for Unsupervised Object Discovery. IEEE International Conference on Robotics and Automation (ICRA), Seattle, May 2015, pages 1344–1351. *Accpt. rate* 41%.
21. H. Profita\*, N. Farrow\*, N. Correll. Flutter: An Exploration of an Assistive Garment Using Distributed Sensing, Computation and Actuation. In: Proc. of the ACM Conference on Tangible Embodied Interaction (TEI), Stanford, CA, 2015. Pages 359–362. *Accpt. rate* 28%.
22. A. Kanakia\*, J. Klingner\*, N. Correll. A Response Threshold Sigmoid Function Model for Swarm Robot Collaboration. In: In Proc. of Int. Symp. on Distributed Autonomous Robotic Systems (DARS), Springer Tracts on Advanced Robotics Vol. 112, Daejeon, Korea, November 2014, pages 193–206. *Accpt. rate* 48%. **Best Paper Award**
23. D. Hughes\*, H. Profita\*, N. Correll. SwitchBack: An On-Body RF-Based Gesture Input Device. In: 18th International Symposium on Wearable Computers (ISWC), pages 63–66, Seattle, WA, September 2014. *Accpt. rate* 25%.
24. T. Caldwell, D. Coleman\*, N. Correll. Optimal Parameter Identification for Discrete Mechanical Systems with Application to Flexible Object Manipulation. In: IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Chicago, IL, September 2014, pages 898–905. *Accpt. rate* 46%.
25. J. Klingner\*, A. Kanakia\*, N. Farrow, D. Reishus, N. Correll. A Stick-Slip Omnidirectional Drive-Train for Low-Cost Swarm Robotics: Mechanism, Calibration, and Control. In: IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Chicago, IL, September 2014, pages 846–851. *Accpt. rate* 46%.
26. J. Harriman\*, M. Theodore, N. Correll. *endo/exo* — Making Art and Music with Distributed Computing. 14th International Conference on New Interfaces for Musical Expression (NIME), pages 383–386, London, UK, 2014. *Accpt. rate* 25%.
27. Michael Otte\*, N. Correll. C-Forest: Parallel Shortest-Path Planning with Super Linear Speedup. 24th International Conference on Automated Planning and Scheduling (ICAPS), pages 532–535. Journal presentation track, Portsmouth, NH, 2014. *Accpt. rate* 25%.

28. A. McEvoy\*, Erik Komendera\* and N. Correll. Assembly Path Planning for Stable Robotic Construction. IEEE International Conference on Technologies for Practical Robot Applications (TEPRA), Boston, MA, April 2014, 6 pages. *Accept. rate n.a.*
29. Erik Komendera\*, J. Dorsey, W. Doggett and N. Correll. Truss Assembly and Welding by Intelligent Precision Jigging Robots. IEEE International Conference on Technologies for Practical Robot Applications (TEPRA), Boston, MA, April 2014, 6 pages. *Accept. rate n.a.*
30. M. Kasper\*, N. Correll and T. Yeh. Abstracting Perception and Manipulation in End-User Robot Programming using Sikuli. IEEE International Conference on Technologies for Practical Robot Applications (TEPRA), Boston, MA, April 2014, 6 pages. *Accept. rate n.a.*
31. D. Hughes\* and N. Correll. A Soft, Amorphous Skin that can Sense and Localize Texture. International Conference on Robotics and Automation (ICRA), pages 1844–1851, 2014. *Accept. rate 48%.*
32. N. Farrow\*, J. Klingner\*, D. Reishus and N. Correll. Miniature Six-channel Range and Bearing System: Algorithm, Analysis and Experimental Validation, pages 6180–6185. International Conference on Robotics and Automation (ICRA), 2014. *Accept. rate 48%.*
33. N. Correll, N. Dasan<sup>+</sup> and N. Farrow (2013): Distributed User Interaction System for a Self-Organizing Smart Wall. Tangible Embodied Interaction (TEI), pages 245-246, 2014. *Accept. rate 27%.*
34. Michael Otte\*, N. Correll and E. Frazzoli. Navigation with Foraging. IEEE/RSJ International Conference on Intelligent Robots and Systems, pages 3150–3157, Tokyo, JP, November 2013. *Accept. rate 43%.*
35. Erik Komendera\*, D. Reishus, N. Correll (2013): Precise Truss Assembly using Commodity Parts and Imprecise Welding. In: IEEE International Conference on Technologies for Practical Robot Applications (TEPRA), Boston, MA, 2013, and NASA technical report NF1676L-16252, 6 pages. *Accept. rate 60%.*
36. N. Correll, N. Farrow\* and S. Ma\*. Honey Comb: A platform for computational robotic materials (Studio). *Seventh International Conference on Tangible, Embedded and Embodied Interaction (TEI)*, pp 419–422, Barcelona, Spain, February, 2013. *Accept. rate n.a.*
37. J. Jeong\*, J. Mulligan, and N. Correll. Trinocular Visual Odometry for Divergent Views with Minimal Overlap. Proceedings of the IEEE Workshop on Robot Vision (WoRV), pages 229–236, Clearwater Beach, FL, January, 2013. *Accept. rate 47%.*
38. S. Ma\*, H. Hosseinmardi\*, N. Farrow\*, R. Han and N. Correll. Establishing Multi-Cast Groups in Computational Robotic Materials. IEEE International Conference on Cyber, Physical and Social Computing, 6 pages, Besancon, France, 2012. *Invited paper.*
39. K. Sugawara, D. Reishus, and N. Correll. Object Transportation by Granular Convection Using Swarm Robots. Distributed Autonomous Robotic Systems, Baltimore, MD, Springer Verlag, November, 2012, 12 pages. *Accept. rate 42%.*
40. N. Correll, C. Wailes\*, and S. Slaby. A One-hour Curriculum to Engage Middle School Students in Robotics and Computer Science using Cubelets. Distributed Autonomous Robotic Systems, Baltimore, MD, Springer Tracts in Advanced Robotics Vol. 104, Springer Verlag, November, 2012, pages 165–176. *Accept. rate 42%.*

41. H. Hosseinmardi\*, R. Han, and N. Correll. Bloom Filter-Based Ad Hoc Multicast Communication in Cyber-Physical Systems and Computational Materials. The 7th International Conference on Wireless Algorithms, Systems, and Applications (WASA), Lecture Notes in Computer Science Volume 7405, 2012, pp 595–606. *Invited paper.*
42. V. Rai\*, A. van Rossum, N. Correll. Self-Assembly of Modular Robots from finite number of modules using Graph Grammars. In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pages 4783–4789, San Francisco, CA, September, 2011. *Acpt. rate 32%.*
43. A. Derbakova, N. Correll and D. Rus. Decentralized Self-Repair to Maintain Connectivity and Coverage in Networked Multi-Robot Systems. In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, pp 3863–3868, Shanghai, China, May 2011. *Acpt. rate 49%.*
44. Michael Otte\* and N. Correll. Any-Com Multi-Robot Path Planning: Maximizing Collaboration for Variable Bandwidth. In *The 10th Int. Symp. on Distributed Autonomous Robotic Systems (DARS)*, Distributed Autonomous Robotic Systems, Springer Tracts in Advanced Robotics, Vol. 83, 2013, pp 161-173, Lausanne, Switzerland, November 2010. *Acpt. rate 39%.*
45. D. Sutton<sup>+</sup>, P. Klein\*, Michael Otte\* and N. Correll. Object Interaction Language (OIL): An Intent-based Language for Programming Self-Organized Sensor/Actuator Networks. In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pages 6113–6118, October 2010. *Acpt. rate 58%.*
46. N. Correll, N. Arechiga, A. Bolger, M. Bollini, B. Charrow, A. Clayton, F. Dominguez, K. Donahue, S. Dyar, L. Johnson, H. Liu, A. Patrikalakis, T. Robertson, J. Smith, D. Soltero, M. Tanner, L. White, D. Rus. Building a Distributed Robot Garden. In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pp 1509-1516, St. Louis, MO. **Finalist for NTF Best Paper Award.** *Acpt. rate 54%.*
47. Jacob Beal, N. Correll, L. Urbina and J. Bachrach. Behavior Modes for Randomized Robotic Coverage. In *Proceedings of the 2nd Int. Conf. on Robot Communication and Coordination (ROBOCOM)*, pp 1-6, Odense, Denmark, 2009. *Acpt. rate n.a.*
48. N. Correll, D. Rus, J. Bachrach and D. Vickery. Ad-hoc Wireless Network Coverage with Networked Robots that Cannot Localize. In *IEEE Int. Conf. on Robotics and Automation (ICRA)*, pp 3878 - 3885, Kobe, Japan, May, 2009. *Acpt. rate 43%.*
49. T. Lochmatter, P. Roudit, C. Cianci, N. Correll, J. Jacot and A. Martinoli. SwisTrack — A Flexible Open Source Tracking Software for Multi-Agent Systems. *International Conference on Intelligent Robots and Systems (IROS)*, pp 4004–4010, Nice, France, 2008.
50. N. Correll, M. Schwager and D. Rus. Social Control of Herd Animals by Integration of Artificially Controlled Congeners. *Proceedings of the Int. Conference on Simulation of Adaptive Behavior (SAB)*, Osaka, Japan, 2008. Springer Lecture Notes in Artificial Intelligence (LNAI) 5040, pp 437–447. **Best Paper Award.**
51. N. Correll. Parameter Estimation and Optimal Control of Swarm-Robotic Systems: A Case Study in Distributed Task Allocation. *IEEE Int. Conf. on Robotics and Automation (ICRA)*, pp 3302–3308, 2008.

52. N. Correll and A. Martinoli. Robust Distributed Coverage using a Swarm of Miniature Robots. *IEEE Int. Conf. on Robotics and Automation (ICRA)*, pp 379–384, Rome, Italy, April 2007.
53. N. Correll, G. Sempo, Y. Lopez de Meneses, J. Halloy, J.-L. Deneubourg, and A. Martinoli. SwisTrack: A tracking tool for multi-unit robotic and biological research. In *IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS)*, pp 2185–2191, Beijing, China, Oct. 2006.
54. N. Correll and A. Martinoli. Towards optimal control of self-organized robotic inspection systems. In *8th Int. IFAC Symp. on Robot Control (SYROCO)*, 6 pages, Bologna, Italy, September 2006.
55. N. Correll and A. Martinoli. System identification of self-organized robotic swarms. In *Int. Symp. on Distributed Autonomous Robotic Systems (DARS)*, pages 31–40, Minneapolis, MN, USA, 2006. Springer Distributed Autonomous Systems VII, Maria Gini and Richard Voyles, editors. **Best Paper Award.**
56. N. Correll and A. Martinoli. Modeling and analysis of beacon-based and beaconless policies for a swarm-intelligent inspection system. In *IEEE Int. Conf. on Robotics and Automation (ICRA)*, pp 2488–2493, Barcelona, Spain, April 2005.
57. N. Correll and A. Martinoli. Modeling and optimization of a swarm-intelligent inspection system. In *Int. Symp. on Distributed Autonomous Robotic Systems (DARS)*, pp 369–378, Toulouse, France, 2004. Springer Distributed Autonomous Systems VI, 2007, Raja Chatila and Rachid Alami, editors.

#### EDITOR-REVIEWED JOURNAL/MAGAZINE ARTICLES

58. N. Correll and Roderich Gross. Guest Editorial: From Swarm Robotics to Smart Materials. Special Issue on Swarm Robotics, *Springer Neural Computing & Applications Journal* 19(6):785-786, 2010.
59. N. Correll. Invited book review for Dejan Milutinović and Pedro Lima, “Cells and Robots: Modeling and Control of Large-Size Agent Populations”, Springer Tracts on Advanced Robotics 2007. *IEEE Control Systems Magazine*, Volume 28, Number 5, pp 140–141, October 2008.
60. N. Correll and A. Martinoli. A Challenging Application in Swarm Robotics: The Autonomous Inspection of Complex Engineered Structures. *Swiss Society of Automatic Control Bulletin*, 2 pages, Peter Gruber, editor, Number 46, 2007. Invited paper.

#### CONFERENCE PROCEEDINGS BASED ON PEER-REVIEWED ABSTRACTS

61. J. Segil, R. Patel, Y. Xiong, M. Schmitt, R. Weir, and N. Correll. Force Sensing Prosthetic Finger Tip using Elastomer-Embedded Commodity Infrared Proximity Sensor, Myoelectric Controls Symposium (MEC), New Brunswick, 2017.
62. N. Correll. Manufacturing of Multifunctional soft composites with integrated proximity and tactile sensing Conference 21st International Conference on Composite Materials, Xi’an, China, 2017.



63. Radhen Patel\*, Jorge Cañardo Alastuey\* and N. Correll. Improving grasp performance using in-hand proximity and force sensing. *Int. Symposium on Experimental Robotics (ISER)*, Tokyo, Japan, 2016. *Acpt. rate 50%*
64. Andy McEvoy\*, N. Correll. Shape Change Through Programmable Stiffness. *International Symposium on Experimental Robotics (ISER)*, Marrakech, Morocco, 2014, Springer Tracts in Advanced Robotics (109):893–907, Springer Verlag, 2015. Oussama Khatib, Vijay Kumar, Ani Hsieh, editors. *Acpt. rate (poster) 80%*.
65. Timothy Caldwell, David Coleman\*, N. Correll. Robotic Manipulation for Identification of Flexible Objects. In: *International Symposium on Experimental Robotics (ISER)*, Marrakech, Morocco, 2014, Springer Tracts in Advanced Robotics (109):133–147, Springer Verlag, 2015. Oussama Khatib, Vijay Kumar, Ani Hsieh, editors. *Acpt. rate (oral) 54%*.
66. Erik Komendera\*, N. Correll. Precise Assembly of 3D Truss Structures Using EKF-based Error Prediction and Correction. In: *International Symposium on Experimental Robotics (ISER)*, Marrakech, Morocco, 2014. Springer Tracts in Advanced Robotics (109):507–521, Springer Verlag, 2015. Oussama Khatib, Vijay Kumar, Ani Hsieh, editors. *Acpt. rate (oral) 54%*.
67. A. McEvoy\*, N. Farrow\*, N. Correll. Toward computational smart materials with controllable stiffness. In: *19th International Conference on Composite Materials*, 11 pages, Montreal, Canada, July, 2013.
68. J. Dorsey, W. Doggett, Erik Komendera\*, N. Correll, R. Hafley, and K. Taminger. An Efficient and Versatile Means for Assembling and Manufacturing Systems in Space, 19 pages, *AIAA SPACE 2012 Conference & Exposition*, 2012.
69. N. Correll, C. Onal, H. Liang, E. Schoenfeld and D. Rus. Soft Autonomous Materials - Using Programmed Elasticity and Embedded Distributed Computation, 10 pages. In *International Symposium on Experimental Robotics (ISER)*, New Delhi, India, December 2010. Oussama Khatib, Vijay Kumar, Gaurav Sukhatme, editors. Springer tracts on advanced robotics, vol 79, 227–240, 2014.
70. Michael Otte\* and N. Correll. Any-Com Multi-Robot Path Planning with Communication Constraints and Dynamic Team Sizes, 10 pages. In *International Symposium on Experimental Robotics (ISER)*. Oussama Khatib, Vijay Kumar, Gaurav Sukhatme, editors. New Delhi, India, December 2010. Springer Tracts in Advanced Robotics Volume 79, pages 743–757, 2014.
71. N. Correll and A. Martinoli. Comparing coordination schemes for miniature robotic swarms: A case study in boundary coverage of regular structures, 12 pages. In *Int. Symp. on Experimental Robotics (ISER)*, Rio de Janeiro, Brazil, July 2006. Springer Tracts in Advanced Robotics (STAR) 39:471–480, 2008. Oussama Khatib, Vijay Kumar, and D. Rus, editors. *Student travel fellowship award*.
72. N. Correll and A. Martinoli. Collective inspection of regular structures using a swarm of miniature robots. In *Int. Symp. on Experimental Robotics (ISER)*, Singapore, June 2004. Springer Tracts in Advanced Robotics (STAR) 21:375–385, 2006, Oussama Khatib and Marcelo Ang Jr., editors.

#### PEER-REVIEWED CHAPTERS IN BOOKS AND COLLECTIONS

These works are not associated with a conference/symposium/workshop proceeding.

73. N. Correll. Robotic Materials for Robot Autonomy. In *Robotic Systems and Autonomous Platforms*, Elsevier, Shawn Walsh and Michael Strano, editors, pages 295–307, 2018 (ISBN 9780081022603).
74. R. Patel\*, R. Curtis\*, B. Romero<sup>+</sup>, N. Correll. Improving grasp performance using in-hand proximity and contact sensing. In *Robotic Grasping and Manipulation Competition 2016, Communications in Computer and Information Science, Volume 816*, pages 146–160, Springer Verlag, Yu Sun and Joseph Falco, editors, 2018.
75. R. Patel, J. Segil and N. Correll. Manipulation using the “Utah” prosthetic hand: The role of stiffness in manipulation. In *Robotic Grasping and Manipulation Competition 2016, Communications in Computer and Information Science, Volume 816*, pages 107–16, Springer Verlag, Yu Sun and Joseph Falco, editors, 2018.
76. N. Correll and Heiko Hamman. Probabilistic Modeling of Swarming Systems. *Springer Handbook of Collective Intelligence*, chapter 74, pages 1421–1430. Invited paper.
77. N. Correll. The Robot in the Garden. In: *Proceedings of the 2010 Dumbarton Oak’s symposium on “Technology and the Garden”*, Michael Lee, editor. Dumbarton Oaks Research Library and Collection (7 pages). *Invited paper*, Harvard University Press.
78. Jacob Beal, Stefan Dulman, Kyle Usbeck, Mirko Viroli, and N. Correll. Organizing the Aggregate: Languages for Spatial Computing. In *Formal and Practical Aspects of Domain-Specific Languages: Recent Developments*, 66 pages, Marjan Mernik, editor, IGI Global, 2013. Invited paper.
79. N. Correll and D. Rus. Architectures and control of networked robotic systems. In *Handbook of Collective Robotics*, pp 81–104, Serge Kernbach, editor, Pan Stanford Publishing, 2013. Invited paper.
80. Gregory Mermoud, Amanda Prorok, Loic Matthey, Christopher Cianci, N. Correll and A. Martinoli. Large-Scale Experiments in Aggregation and Self-Assembly. In *Handbook of Collective Robotics*, pp 231–260, Serge Kernbach, editor, Pan Stanford Publishing, 2013. Invited paper.
81. Francesco Mondada, A. Martinoli, N. Correll, A. Gribovskiy, Jose Halloy, Roland Siegwart and J.-L. Deneubourg. A General Methodology for the Control of Mixed Natural-Artificial Societies. In *Handbook of Collective Robotics*, pp 547–586, Serge Kerbach, editor, Pan Stanford Publishing, 2013. Invited paper.

#### PEER-REVIEWED WORKSHOP PAPERS

82. D. Hughes, and C. Heckman, and N. Correll. Terrain Sensitive Tires for Autonomous Driving. *Material Robotics Workshop at Robotics: Science and Systems*, July 2017.
83. D. Hughes and N. Correll. In-Material Computation of High-Bandwidth Sensor Signals in Robotic Skin. *The Robotic Sense of Touch: From Sensing to Understanding Workshop at IEEE International Conference on Robotics and Automation*, May 29–June 3, 2017.

84. Timothy Caldwell, N. Correll (2015): Zero-Control Linearization-Based Steering for Sample-Based Planning of Dynamic Systems. In: Workshop for Optimal Robot Motion Planning at ICRA'15, 2 pages, 2015
85. N. Correll, Richard Voyles. Robotic Materials: From smart polymers to computational metamaterials. In: Proceedings of Robot Makers workshop in conjunction with Robotics: Science and Systems (RSS), 6 pages, Berkeley, CA, 2014. *Invited paper*
86. N. Correll, Nicholas Farrow\*, Ken Sugawara, Michael Theodore. The Swarm Wall: Toward Life's Uncanny Valley. In: K. Goldberg, H. Knight, P. Salvini (Ed.): IEEE International Conference on Robotics and Automation, Workshop on Art and Robotics: Freud's Unheimlich and the Uncanny Valley, 2 pages, 2013. *Accept. rate 50%*.
87. Michael Otte\* and N. Correll. The Any-Com Approach to Multi-Robot Coordination. In *IEEE International Conference on Robotics and Automation (ICRA), Workshop on Network Science and Systems Issues in Multi-Robot Autonomy (NETSS)*, 4 pages, Anchorage, USA, 2010.
88. N. Correll and A. Martinoli. Modeling Self-Organized Aggregation in a Swarm of Miniature Robots. In *IEEE International Conference on Robotics and Automation Workshop on "Collective Behaviors inspired by Biological and Biochemical Systems"*, 6 pages, Rome, Italy, April, 2007.
89. N. Correll, Christopher Cianci, Xavier Raemy, and A. Martinoli. Self-Organized Embedded Sensor/Actuator Networks for "smart" Turbines. In *IEEE/RSJ International Conference on Intelligent Robots and Systems Workshop "Network Robot System: Toward intelligent robotic systems integrated with environments"*, 6 pages, Beijing, China, October 2006.

#### PEER-REVIEWED CONFERENCE VIDEOS, POSTERS, AND DEMOS

90. Jacob Segil, Radhen Patel\*, Yanyu Xiong<sup>+</sup>, Marie Schmitt, Richard Weir, N. Correll. Force Sensing Prosthetic Finger Tip using Elastomer-Embedded Commodity Infrared Proximity Sensor. *Myoelectric Controls Symposium (MEC)*, New Brunswick, 2017.
91. N. Correll. Materials that couple sensing, actuation, computation and communication. Gordon Conference on Multifunctional Materials and Structures, Ventura, CA, January 2016. *Invited poster*.
92. Helen McCreery\* and N. Correll. "Know when you're beaten: efficient cooperative transport requires either a directional bias or that outnumbered individuals give up quickly.", Biological Distributed Algorithms Workshop, associated with Distributed Computing 2014. October, Austin, Texas.
93. J. Kim\*, Mike Kasper\*, Tom Yeh, N. Correll. SikuliBot: Automating Physical Interface Using Images. In *27th ACM User Interface Software and Technology Symposium (UIST)*, pages 53–54, Honolulu, Hawaii, October 2014.
94. Dana Hughes\*, N. Farrow\*, N. Correll. Distributed Texture Identification and Localization in Artificial Skin. In: *2013 International Workshop on Soft Robotics and Morphological Computation*, 1 page, Monte Veritas, CH, 2013.

95. Nicholas Farrow\*, E. Cornell<sup>+</sup>, N. Correll. Bioinspired Active Camouflage Using Artificial Chromatophores. In: 2013 International Workshop on Soft Robotics and Morphological Computation, 1 page, Monte Veritas, CH, 2013.
96. H. Profita\*, Nicholas Farrow\*, and N. Correll. Flutter. In Adjunct Proceedings of the 16th International Symposium on Wearable Computers (ISWC), Newcastle, UK, pages 44-46, June, 2012. **Best in Show** and **Best in most Inclusive and Usable Design**
97. A. Cephers<sup>+</sup>, I. Kushnir<sup>+</sup>, Michael Otte\*, C. Lewis, N. Correll. Brain Computer Interfaces. In AAAI Video Competition, Atlanta, GA, USA, 2010.
98. H. Balakrishnan, N. Correll, J. Eriksson, S. Lim, S. Madden and D. Rus. PCP: The Personal Commute Portal. In 6th ACM Conference on Embedded Networked Sensor Systems (SenSys '08), Raleigh, NC, USA, November 2008.
99. N. Correll, G. Sempo, Y. Lopez de Meneses, J. Halloy, J.-L. Deneubourg, and A. Martinoli. SwisTrack: A tracking tool for multi-unit robotic and biological research. In *Proc. of the IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS)*, page 8, Beijing, China, October 2006.

#### TECHNICAL REPORTS

100. Michael Otte\* and N. Correll. Path Planning with Forests of Random Trees: Parallelization with Super Linear Speedup. University of Colorado at Boulder CU-CS 1079-11, 8 pages, 2011.
101. Erik Komendera\*, Dustin Reishus, and N. Correll. Assembly by Intelligent Scaffolding. University of Colorado at Boulder CU-CS 1080-11, 8 pages, 2011.
102. Neeti Wagle\* and N. Correll. Multiple Object 3D-Mapping using a Physics Simulator, 6 pages, Technical report CU-CS 1069-10, July, 2010.
103. N. Correll. 6-DOF Visual Servoing Using the Lie Group of Affine Transformations. ISRN LUTFD2/TFRT-5690-SE, June 2002, Department of Automatic Control, Lund Institute of Technology, Lund, Sweden.

#### THESES

104. N. Correll. Coordination Schemes for Distributed Boundary Coverage with a Swarm of Miniature Robots: Synthesis, Analysis and Experimental Validation. PhD Dissertation. École Polytechnique Fédérale Lausanne, 2007. **Nominated for best EPFL PhD thesis.**
105. N. Correll. Collaborative Exploration and Coverage. Master's Thesis, Collective Robotics Group, California Institute of Technology/Automatic Control Laboratory, Swiss Federal Institute of Technology, Zurich, 2003.

## PATENTS

1. Correll, N., Miller, A.K. and Romero, B., Robotic Materials Inc, 2021. Systems, Devices, Components, and Methods for a Compact Robotic Gripper with Palm-Mounted Sensing, Grasping, and Computing Devices and Components. U.S. Patent 11,148,295.

## PATENT APPLICATIONS

1. Multi-Modal Fingertip Sensor With Proximity, Contact, And Force Localization Capabilities  
N Correll, R Patel, J Segil, J Klingner, RF Weir US Patent App. 17/257,715, 2021.
2. N. Correll. Measuring distance and contact force during robotic manipulation. Provisional  
No. 62/322,469. Priority date April 11, 2016.
3. Dana Hughes\*, Halley Profita\*, and N. Correll. On-Body RF-Based Gesture Input Device.  
No. WO2016040938 A1, March 16, 2016. (Priority date September 12, 2014).