

# Jana Pavlasek

PHD CANDIDATE · ROBOTICS DEPARTMENT

University of Michigan, Ann Arbor, MI, USA

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## EDUCATION

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### University of Michigan

PHD, ROBOTICS

- Advisor: Professor Chad Jenkins

Ann Arbor, MI, USA

Expected May 2024

### University of Michigan

M.Sc, ROBOTICS

- Advisor: Professor Chad Jenkins

Ann Arbor, MI, USA

May 2020

### McGill University

B.ENG. ELECTRICAL ENGINEERING (HONOURS)

- Honours thesis advisors: Professor David Meger, Professor Gregory Dudek

Montreal, QC, Canada

December 2017

## PUBLICATIONS

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### PEER-REVIEWED PUBLICATIONS

**Jana Pavlasek**, Joshua Mah, Ruihan Xu, Odest Chadwicke Jenkins, and Fabio Ramos. Stein variational belief propagation for multi-robot coordination. In *Robotics and Automation Letters (RA-L)*, 2024.

Website: <https://progress.eecs.umich.edu/projects/stein-bp/>

Peter Gaskell, **Jana Pavlasek**, Tom Gao, Abhishek Narula, Stanley Lewis, and Odest Chadwicke Jenkins. MBot: A modular ecosystem for scalable robotics education. In *International Conference on Robotics and Automation (ICRA)*, 2024. To appear. Website: <https://mbot.robotics.umich.edu/>

Anthony Opipari, **Jana Pavlasek**, Chao Chen, Shoutian Wang, Karthik Desingh, and Odest C. Jenkins. DNBP: Differentiable nonparametric belief propagation. *ACM/IMS Journal of Data Science*, 1(1), 2024. Website: <https://progress.eecs.umich.edu/projects/dnbp/>

**Jana Pavlasek**, Stanley Lewis, Balakumar Sundaralingam, Fabio Ramos, and Tucker Hermans. Ready, set, plan! Planning to goal sets using generalized Bayesian inference. In *Conference on Robot Learning (CoRL)*, 2023.

Website: <https://janapavlasek.com/projects/goal-sets/>

Elizabeth A. Olson, **Jana Pavlasek**, Jasmine A. Berry, and Odest Chadwicke Jenkins. Counter-hypothetical particle filters for single object pose tracking. In *International Conference on Robotics and Automation (ICRA)*, 2023.

Xiaotong Chen, Kaizhi Zheng, Zhen Zeng, Shreshtha Basu, James Cooney, **Jana Pavlasek**, and Odest Chadwicke Jenkins. Manipulation-oriented object perception in clutter through affordance coordinate frames. In *International Conference on Humanoid Robots (Humanoids)*, 2022.

Stanley Lewis, **Jana Pavlasek**, and Odest Chadwicke Jenkins. NARF22: Neural articulated radiance fields for configuration-aware rendering. In *International Conference on Intelligent Robots and Systems (IROS)*. IEEE, 2022. Website: <https://progress.eecs.umich.edu/projects/narf/>

**Jana Pavlasek**, Stanley Lewis, Karthik Desingh, and Odest Chadwicke Jenkins. Parts-based articulated object localization in clutter using belief propagation. In *International Conference on Intelligent Robots and Systems (IROS)*. IEEE, 2020. Website: <https://progress.eecs.umich.edu/projects/tool-parts/>

## WORKSHOPS

- Jana Pavlasek**, Joshua Mah, Odest Chadwicke Jenkins, and Fabio Ramos. Stein variational belief propagation for decentralized multi-robot control. In *ICRA 2023 Workshop on Distributed Graph Algorithms for Robotics*, 2023.
- Elizabeth Olson, **Jana Pavlasek**, Jasmine Berry, and Odest Jenkins. Counter-hypothetical particle filters for single object pose tracking. In *IROS 2022 Workshop Probabilistic Robotics in the Age of Deep Learning*, 2022.
- Anthony Pipari, **Jana Pavlasek**, Chao Chen, Shoutian Wang, Karthik Desingh, and Odest Chadwicke Jenkins. Differentiable nonparametric belief propagation. In *IEEE ICRA 2022 Workshop on Robotic Perception and Mapping: Emerging Techniques*, 2022.
- Karthik Desingh, **Jana Pavlasek**, Cigdem Kokenoz, and Odest Chadwicke Jenkins. Tracking large scale articulated models with belief propagation for task informed grasping and manipulation. In *Robotics: Science and Systems Workshop on Task-Informed Grasping*, 2019.
- Jana Pavlasek**, Karthik Desingh, and Odest Chadwicke Jenkins. Scene understanding using part-based object affordances. In *Robotics: Science and Systems Workshop on Women in Robotics*, 2019.
- Sina Masnadi, Joseph J LaViola Jr, **Jana Pavlasek**, Xiaofan Zhu, Karthik Desingh, and Odest Chadwicke Jenkins. Sketching affordances for human-in-the-loop robotic manipulation tasks. In *International Conference on Robotics and Automation Workshop on Robot Teammates Operating in Dynamic, Unstructured Environments*, 2019.

## PRE-PRINTS

- Anthony Pipari, Chao Chen, Shoutian Wang, **Jana Pavlasek**, Karthik Desingh, and Odest Chadwicke Jenkins. Differentiable nonparametric belief propagation. *arXiv preprint arXiv:2101.05948*, 2021.

## TEACHING EXPERIENCE

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- Winter 2024 **Hello, Robot! Introduction to AI and Programming**, Teaching Consultant, Morehouse College.
- Fall 2023 **Hello, Robot! Introduction to AI and Programming**, Teaching Consultant, University of Michigan, Howard University, and Berea College.
- Fall 2021 **Introduction to AI and Programming (ROB 102)**, Co-Instructor, University of Michigan.
- Fall 2022  
2021 **Introduction to AI and Programming (ROB 102)**, Course Developer, University of Michigan.
- Fall 2019 **Mathematics for Robotics (ROB 501)**, Graduate Student Instructor, University of Michigan.
- Fall 2020
- Winter 2019 **Autonomous Robotics (EECS 467)**, Graduate Student Instructor, University of Michigan.
- Winter 2016 **Design Principles & Methods (ECSE 211)**, Teaching Assistant, McGill University.
- Fall 2017

## PROFESSIONAL EXPERIENCE

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- 2022 **Research Intern**, NVIDIA Robotics Lab, Seattle, Washington, USA.
  - Supervised by Professors Tucker Hermans, Fabio Ramos and Dieter Fox
- 2018 **Research Assistant**, Mobile Robotics Lab, McGill University, Montreal, QC, Canada
  - Supervised by Professors Greg Dudek, Joelle Pineau and Dave Meger
- 2017 **Autonomy Intern**, Clearpath Robotics, Kitchener, ON, Canada
- 2016 **Software Development Intern**, Clearpath Robotics, Kitchener, ON, Canada
- 2015 **EEDP Software Intern**, GE Lighting, Lachine, QC, Canada
- 2014 **Research Assistant**, Shared Reality Lab, McGill University, Montreal, QC, Canada
  - Supervised by Professor Jeremy Cooperstock

## AWARDS, FELLOWSHIPS, & GRANTS

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- 2024 **Towner Prize for Outstanding GSIs**, College of Engineering, University of Michigan.
- 2023 **Claudia Joan Alexander Trailblazer Award**, Women in Science and Engineering, University of Michigan.
- Towner Prize for Outstanding GSIs Honorable Mention**, College of Engineering, University of Michigan.
- 2021 **Postgraduate Doctoral Scholarship**, Natural Sciences and Engineering Research Council of Canada (NSERC).
- 2018 **Doctoral Fellowship**, Robotics Institute, University of Michigan.
- 2017 **Engineering Scholarship**, Faculty of Engineering, McGill University.
- 2016 **Experience Award**, Natural Sciences and Engineering Research Council of Canada (NSERC).
- 2014 **Undergraduate Student Research Award**, Natural Sciences and Engineering Research Council of Canada (NSERC).

## PRESENTATIONS

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### INVITED TALKS

- Winter 2024. *Think Graphical, Act Local: Distributed Inference for Robot Perception, Planning, and Education*. Invited talk: Introlab Workshop, Universite de Sherbrooke.
- Fall 2023. *Think Graphical, Act Local: Distributed Inference for Robot Perception, Planning, and Education*. Guest Lecture: Introduction to Intelligent Robotic Systems (CSCI 5551), University of Minnesota.
- Fall 2023. *Think Graphical, Act Local: Distributed Inference for Robot Perception, Planning, and Education*. Invited talk: Case Western Reserve University, Cleveland, Ohio, USA.
- Fall 2023. *Stein Variational Inference for Planning with Goal Sets and Graphs*. Invited talk: Machine Learning Reading Group, University of Sydney, Sydney, Australia.
- Fall 2023. *Think Graphical, Act Local: Distributed Inference for Robot Perception, Planning, and Education*. Invited talk: Robotics Colloquium, Worcester Polytechnic University, Worcester, Massachusetts, USA.
- Fall 2022. *Distributed Inference for Robot Perception & Coordination*. Guest Lecture, Localization, Mapping, and Navigation (ROB 330), University of Michigan.
- Winter 2022. *Distributed Inference for Robot Perception & Coordination*. Guest Lecture, Introduction to Autonomous Robotics (EECS 367), University of Michigan.

### CONTRIBUTED PRESENTATIONS

*\* presenting author*

- Jana Pavlasek\***, Stanley Lewis, Balakumar Sundaralingam, Fabio Ramos, and Tucker Hermans. 2023. Ready, set, plan! Planning to goal sets using generalized Bayesian inference. Poster: Conference on Robot Learning, Atlanta, Georgia, USA.
- Jana Pavlasek\***, Stanley Lewis, Karthik Desingh, and Odest Chadwicke Jenkins. 2020. Parts-based articulated object localization in clutter using belief propagation. Oral presentation: International Conference on Intelligent Robots and Systems (IROS), Remote.

## ADVISING & MENTORING

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- 2023 – **Joshua Mah**, Robotics M.Sc., University of Michigan
- 2023 – **Ruihan (Multy) Xu**, CS Undergraduate, University of Michigan
- 2023 – **Thirumalaesh Ashokkumar**, Robotics M.Sc., University of Michigan
- 2022 – **Joseph Taylor**, Robotics M.Sc., University of Michigan
- 2021 – **Tom Gao**, CS Undergraduate, University of Michigan
- 2023 – **Yufeiayang Gao**, CS Undergraduate, University of Michigan
- 2023 **Justin Boverhof**, Undergraduate, University of Michigan
- Project: Image Classification using Machine Learning for Educational Robotics
  - Undergraduate Research Opportunity Program (UROP)
- 2022 – 2023 **Franklin Volcic**, CS Undergraduate, University of Michigan
- Honours Thesis: RoboEdu: Unlocking the Magic of Robots for Everyone
- 2021 – 2023 **Brody Riopelle**, CS Undergraduate, University of Michigan
- 2021 – 2023 **Maxwell Topping**, CS Undergraduate, University of Michigan
- 2022 – 2023 **Isaac Madhavaram**, CS Undergraduate, University of Michigan
- 2020 **Jesus Arredondo-Reyes, Trevon King, Stephen Seymour, Leoul Tilahun**, Engineering Physics Undergraduates, Morehouse College
- Undergraduate design project: Synthetic Realistic Visual Data Collection using Unreal Engine
- 2020 **Stephen Seymour**, Engineering Physics Undergraduates, Morehouse College
- 2020 **Sophie van Genderen**, CS Undergraduate, DePauw University
- ACM CRA-WP Distributed Research Experiences for Undergraduates (DREU) program
- 2020 **Priscilla Saarah**, Undergraduate, Dillard University
- ACM CRA-WP Distributed Research Experiences for Undergraduates (DREU) program

## OUTREACH & PROFESSIONAL DEVELOPMENT

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### ORGANIZING

- May 2024 **Workshop on Back to the Future: Robot Learning Going Probabilistic**, International Conference on Robotics and Automation (ICRA). Yokohama, Japan.  
*Website:* <https://probabilisticrobotics.github.io/>
- Oct. 2023 **Workshop on Differentiable Probabilistic Robotics: Emerging Techniques for Robot Learning**, International Conference on Intelligent Robotics and Systems (IROS). Detroit, MI, USA.  
*Website:* <https://diff-prob-rob.org>
- June 2023 **Distributed Teaching Collaboratives Bootcamp**, University of Michigan, Ann Arbor, MI, USA.  
*Website:* <https://hellorob.org/dtc-bootcamp>
- Nov. 2022 **Distributed Teaching Collaboratives for AI and Robotics**, AAAI Fall Symposium Series, Arlington, VA, USA.  
*Website:* <https://dtc-ai.org>

## SERVICE AND OUTREACH

- 2019 – 2021 **Outreach Chair**, Robotics Graduate Student Council, University of Michigan, Ann Arbor, MI, USA
- 2019 – 2020 **Co-lead**, Women in Robotics, University of Michigan, Ann Arbor, MI, USA
- College of Engineering Community Grant recipient.
- 2019 **Organizer, Discover Engineering**, University of Michigan, Ann Arbor, MI, USA

## EXTRACURRICULAR ACTIVITIES

- 2016 – 2017 **Software Division Leader**, McGill Robotics, McGill University, Montreal, QC, Canada.
- 2016 **Co-Director of Technology**, RoboHacks, McGill University, Montreal, QC, Canada.
- 2013 – 2016 **Robotics Systems Designer**, McGill Robotics, McGill University, Montreal, QC, Canada.

## PEER REVIEW

- IEEE Robotics and Automation Letters (RA-L)
- IEEE International Conference on Robotics and Automation (ICRA)
- IEEE/RSJ International Conference on Robots and Systems (IROS)
- Robotics: Science and Systems (RSS)

## PROFESSIONAL MEMBERSHIPS

- IEEE Student Member
- IEEE Robotics and Automation Society (RAS) Student Member

## PERSONAL INFORMATION

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CITIZENSHIP Canadian

LANGUAGES English (native proficiency), French (fluent).