

THOMAS BRENDAN COHN

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EDUCATION

UNIVERSITY OF MICHIGAN, Ann Arbor

September 2017 - Present

College of Engineering – Computer Science BSE (Expected May 2022)

College of LSA – Honors Mathematics BS (Expected May 2022)

Minor in Statistics, Minor in Music

- Engineering Honors Program
- Dean's List
- Tau Beta Pi Honor Society
- Phi Kappa Phi Honor Society
- Bell Scholarship
- Regents Merit Scholarship
- Raab Family Scholarship
- Wanda W. Lincoln Scholarship

GPA: 3.68/4.00

EXPERIENCE

LABORATORY FOR PROGRESS, University of Michigan

May 2016 - Present

Research Assistant to Professor Chad Jenkins

Major Projects:

- Manifold Learning via Nonparametric Belief Propagation
 - Accurately infer tangent spaces of high dimensional data on a manifold
 - Denoise neighborhood graph to find an accurate embedding
 - Published as **TSBP: Tangent Space Belief Propagation for Manifold Learning**. *Robotics and Automation: Letters*. 2020; 5.4; 6694-6701
- Topologically-Informed Atlas Learning for Dimensionality Reduction
 - Embed manifold data with an atlas of coordinate charts
 - Robustly assign domains based on observed data topology
 - Used to process human motion capture data and build kinematic models for articulated objects
- Coordinate Chart Particle Filter for Deformable Object Pose Estimation
 - Learn a latent representation of deformable objects using manifold learning
 - Coordinate chart enables efficient particle filter convergence for localization
- Particle-Based Localization and Grasping of Grocery Bags
 - Detect handles in camera feed using SVM trained on Histogram of Oriented Gradients
 - Triangulate 3D location by moving robot while running 2-stage particle filter

COLLEGE OF ENGINEERING, University of Michigan

January 2019 - Present

Instructional Aide – Introduction to Microprocessor Computing Systems (Winter 2019, Winter 2020)

– Introduction to AI and Programming (Fall 2021)

- Hold office hours, teach lab sections, help students with lab work and projects

Michigan Marching Band, University of Michigan

January 2017 - Present

Member; Rank Leader since December 2019

- In charge of the cymbal section of the drumline
- Rehearse for 20+ hours per week August-December

Green Ladder Technologies LLC

May 2015 - August 2015

Contracted Developer

- Programmed embedded controllers for in vitro fertilization clinic air quality monitoring systems

SKILLS

- Programming Languages: Proficient in C++, Python, and JavaScript; familiar with C, Matlab
- Computing Tools: Proficient in Git, Bash, ROS, and L^AT_EX
- Mathematics: Graduate-level coursework in probability theory, graph theory, linear algebra, topology, differentiable manifolds, abstract algebra, Riemannian geometry, and convex optimization.