

Daniel Nakhimovich

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EDUCATION



Rutgers University

Doctor of Philosophy in Computer Science & Robotics; GPA: 3.97

New Brunswick, NJ

Sept 2019 – May 2026



The Cooper Union

Bachelor of Engineering in Electrical Engineering; GPA: 3.55

New York, NY

Sept 2015 – May 2019



Machon Shlomo: The Heiden Institute

Jewish Law, Ethics, Philosophy, and Leadership

Jerusalem, Israel

Sept 2021 – June 2023

PEER-REVIEWED PUBLICATIONS

Development of a Socially Cognizant Robotic Campus Guide, by Benjamin Greenberg,

Daniel Nakhimovich, Richard Magnotti, Hriday Purohit, Sanskar Shah, Aniket Satish Kulkarni, Uriel Gonzalez-Bravo, and Noah R. Carver, in *Companion of the 2024 ACM/IEEE International Conference on Human-Robot Interaction (HRI)*, 2024.

Resolution Complete In-Place Object Retrieval given Known Object Models, by

Daniel Nakhimovich, Yinglong Miao, and Kostas E. Bekris, in *IEEE International Conference on Robotics and Automation (ICRA)*, 2023.

Effective and Robust Non-prehensile Manipulation via Persistent Homology Guided Monte-Carlo Tree Search, by Ewerthon R. Vieira, Kai Gao, Daniel Nakhimovich, Kostas E. Bekris, and Jingjin Yu, in *International Symposium on Experimental Robotics (ISER)*, 2023.

Persistent Homology for Effective Non-Prehensile Manipulation, by Ewerthon R. Vieira,

Daniel Nakhimovich, Kai Gao, Rui Wang, Jingjin Yu, and Kostas E. Bekris, in *IEEE International Conference on Robotics and Automation (ICRA)*, 2022.

Uniform Object Rearrangement: From Complete Monotone Primitives to Efficient Non-Monotone Informed Search, by Rui Wang, Kai Gao, Daniel Nakhimovich, Jingjin Yu, and Kostas E. Bekris, in *IEEE International Conference on Robotics and Automation (ICRA)*, 2021.

Robotics as an Enabler of Resiliency to Disasters: Promises and Pitfalls, by Rui Wang,

Daniel Nakhimovich, Fred S. Roberts, and Kostas E. Bekris, in *Resilience in the Digital Age - Lecture Notes in Computer Science (LNCS)*, Springer Nature, 2021.

Pushing the Boundaries of Asymptotic Optimality in Integrated Task and Motion Planning, by

Rahul Shome, Daniel Nakhimovich, and Kostas E. Bekris, in *Algorithmic Foundations of Robotics XIV*, Springer International Publishing, 2021.

Giga Graph Cities: Their Buckets, Buildings, Waves, and Fragments, by James Abello,

Haoyang Zhang, Daniel Nakhimovich, Chengguizi Han, and Mridul Aanjaneya, in *IEEE Computer Graphics and Applications*, IEEE, 2022.

Graph Cities: Their Buildings, Waves, and Fragments, by James Abello, Daniel Nakhimovich,

Chengguizi Han, and Mridul Aanjaneya, in *The 4th International Workshop on Big Data Visual Exploration and Analytics with EDBT/ICDT (BigVis)*, 2021.

Graph Waves, by James Abello and Daniel Nakhimovich, in *The 3rd International Workshop on Big Data Visual Exploration and Analytics with EDBT/ICDT (BigVis)*, 2020.

SKILLS

Programming Languages: C/C++, C#, Python, Linux, Java, Rust, MATLAB, Verilog, Bash, PHP, SQL, Ruby

Software Libraries: AWS, OpenCV, PyTorch, ROS, MuJoCo, Ollama, Unity, Docker, Boost, spaCy, MongoDB

Robots and Hardware: Baxter, Yaskawa Motoman, Xilinx FPGAs, 3D Printers

Natural Languages: English (Native), Russian (Conversant), Hebrew (Reading Only)

INDUSTRY EXPERIENCE

 Audible <i>Software Development Engineering Intern</i>	Cambridge, MA Summer 2025
<ul style="list-style-type: none">• Designed an AWS workflow for autogenerating “Accompanying PDFs” for Audio Books• Implemented the PDF generation workflow using AWS CDK and Java as well as automated unit tests and integration tests achieving 100% code coverage.• Refined a workflow using Amazon Bedrock via Cline to quickly develop prototype features while encouraging rigorous testing to ensure production level quality.	
 PulsePoint <i>TechOps Intern</i>	New York, NY Summer 2017
<ul style="list-style-type: none">• Reduced false positive QPS (queries per second) alerts by 92% by filtering out statistical outliers.• Implemented automated backups and data verification of ten 100GB databases using Bash scripts and SQL queries executed inside temporary Docker containers.• Physically diagnosed and reconfigured 2 servers, ensuring continuous uptime of critical application infrastructure.• Developed 3 new dashboards used for monitoring application reliability.	
 Conceptheaca <i>Mobile Application Developer</i>	Fair Lawn, NJ 2015 – 2016
<ul style="list-style-type: none">• Identified key medical procedures, via collaborating with Doctors, that could use mobile applications to reduce a physician’s workload 85%.• Designed and implemented 2 applications (Android and iOS) to aid medical professionals to better monitor patients and administer medication.• Incorporated generative/procedural algorithms in a mobile application to create artistic high resolution images (4k) in less than 1 second.• Incorporated generative algorithms in a mobile app to create abstract art.	

MISCELLANEOUS RESEARCH PROJECTS

 PRACSYS <i>PI: Kostas Bekris</i>	New Brunswick, NJ Sept 2019 – May 2026
<ul style="list-style-type: none">• Robot Nudging: A robot nudge is a robot behaviour or inherent design which alters a person’s behaviour without significantly changing the incentive structure. I performed an extensive literature review of the subject in order to discover which ethical parameters are most urgent to consider for robot designers and policy makers.• Object Rotation Task Descriptions for Robots in English: I performed an informal survey, collecting human descriptions in English of household objects being rotated in a simulated environment. The goal is to study how people naturally describe tasks to a robot without using “key words” or “wake phrases”.• Put That There: Human-Robot Interaction studies typically focus on robots understanding humans whereas this project studies how robots can be better understood by humans. I designed and performed experiments to test human ability to interpret instructions given by a real robot.	

 DIMACS <i>PI: James Abello</i>	Piscataway, NJ Summer 2018 – 2020
<ul style="list-style-type: none">• k-connectivity: k-connectivity is a connectivity measure for graphs. I designed two algorithms for finding approximations of minimum separating sets of a graph in order to perform efficient graph decomposition for data visualization.• Graph Peeling: Graph Peeling is the iterative process of removing vertices from a graph. I explored properties of various graph peeling techniques and designed a new peeling algorithm (wave decomposition) in order to decompose very large graphs efficiently.	

TEACHING/MENTOR EXPERIENCE

 Lumiere Education <i>Research Mentor</i>	Online 2023 – 2024
 Rutgers University <i>Mentor to Undergraduate Students in Robotics</i> <i>Teaching Assistant for Introduction to Data Structures and Algorithms</i>	New Brunswick, NJ 2020 – 2021 Fall 2019

 **Concepthecha**
Mentor to Android Developement Interns

Fair Lawn, NJ
2015 – 2016

 **Fair Lawn High School**
Marching Band Woodwind Section Leader and Clarinet Tutor

Fair Lawn, NJ
2014 – 2015

ONE-OFF PROJECTS

2019; OpenSesame: Open source cryptographic co-processor implemented on an FPGA

2018; pass2act: Passive to active sentence transformer built using spaCy's dependency tree parser

2017; biboch: Bitboard checkers implementation with an AI that performs a fast alpha/beta search on the game tree

2016; 8-bit processor: Custom 8-bit instruction set architecture written in verilog

2015; 2048 Circuit: A recreation of the popular mobile game 2048 using various CMOS ICs, buttons, and LEDs

AWARDS/CERTIFICATIONS

2023; Best Design Process Award at HRI: Development of a Socially Cognizant Robotic Campus Guide

2023; Certificate in Socially Cognizant Robotics: Upon completing 2 years in an NSF-funded National Research Traineeship focused on Socially Cognizant Robotics for a Technology Enhanced Society

2021; Best Paper Award at BigVis: Graph Cities: Their Buildings, Waves, and Fragments

2018; HackCooper; 1st prize: skEye Net - Wireless eye tracking / gaze estimation headset that works in realtime

2015 — 2019; Half-tuition scholarship: Merit scholarship from Cooper Union

2015 — 2019; Innovators Merit Scholarship: Merit scholarship from Cooper Union

2015; David Lee Memorial Scholarship: For academic achievement and community service

MISCELLANEOUS

Peer Reviewes: 2019 - ...

- **ISER:** International Symposium on Experimental Robotics
- **IROS:** Conference on Intelligent Robots and Systems
- **RSS:** Robotics: Science and Systems Conference
- **CoRL:** Conference on Robot Learning
- **ICRA:** International Conference on Robotics and Automation
- **ICAR:** International Conference on Advanced Robotics
- **RA-L:** IEEE Robotics and Automation Letters
- **BigVis:** Big Data Visual Exploration and Analytics Conference