Constantinos Chamzas

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Education

- **William Marsh Rice University** — Houston, TX, USA
  Ph.D. in Computer Science, Advisor: Dr. Lydia E. Kavraki — *Aug. 2017 – May 2023*
  - Thesis: Retrieval-Based Learning for Efficient High-DoF Motion Planning
- **Aristotle University of Thessaloniki** — Thessaloniki, Greece
  Diploma in Electrical and Computer Engineering — *Sep.2011 – Apr.2017*
  - Graduated with "Excellent," **8.86/10** cumulative average (Top 2%)
  - Thesis: Structural Analysis of Handwritten Equations Using Probabilistic Context-Free Grammars

Work Experience

- **Worcester Polytechnic Institute** — WPI, Worcester
  Assistant Professor, Robotics Engineering — *July. 2023 – Present*
  - Teaching Courses: Robotic Motion Planning (RBE550)
  - Research Areas: Learning and Planning, Planning under Uncertainty, Task and Motion Planning
- **Kavraki Lab,** http://kavrakilab.org/ — Rice University, Houston
  Graduate Student — *Aug. 2017 – May 2023*
  - Authored research papers in Robotic Learning
  - Developed open-source software for educational and research purposes
- **NVIDIA Seattle Robotics Lab,** https://nvidia_srl.gitlab.io/ — NVIDIA, Remote
  Research Intern — *Sept. 2022 – Dec. 2022*
  - Worked on robust Task and Motion Planning
- **Adacomp Lab,** https://adacomp.comp.nus.edu.sg/ — NUS, Singapore
  Research Intern — *Jul. 2022 – Aug. 2022*
  - Developed a POMDP formulation for planning with manipulators
- **TracLabs Robotics Group,** https://traclabs.com/ — TracLabs, Houston
  Research Intern — *Jul. 2019 – Aug. 2019*
  - Integrated a Motion Planning framework and experience-based planning in an industrial problem
- **Pandora Robotics Group,** http://pandora.ee.auth.gr/ — Aristotle University, Thessaloníki
  Software Engineer and Tester — *Sep. 2013 – Feb. 2015*
  - Worked on robot mapping and online diagnostic testers

Awards, Nominations and Fellowships

- **Future Faculty Fellowship from Rice University** — Rice University, Houston
  Awarded to Ph.D./Postoctoral students applying to tenure-track positions — *Sept. 2022*
- **ICRA 2021 Best Paper Top-4 Finalist in Cognitive Robotics** — Rice University, Houston
  Nomination of relevant papers in a competitive basis — *Jun. 2021*
- **NSF Graduate Research Fellowship** — Rice University, Houston
  Awarded to outstanding graduate students in the US in STEM — *May. 2019*
- **ICRA 2019 Travel Grant** — Rice University, Houston
  Awarded to attendees in a competitive basis — *Mar. 2019*
- **Hellenic Professional Society of Texas Scholarship** — Rice University, Houston
  Awarded to students with Greek Origins for Academic Excellence — *Jan. 2018*

Open Source Software

- **MotionBenchMaker** `https://github.com/KavrakiLab/motion_bench_maker`
  Core Developer/Maintainer *January 2022 – present*
- **Pyre Library** `https://github.com/KavrakiLab/pyre`
  Core Developer/Maintainer *April 2021 – present*
- **Robowflex Library** `https://github.com/KavrakiLab/robowflex`
  Core Contributor *March 2019 – present*
- **The Open Motion Planning Library (OMPL)** `http://ompl.kavrakilab.org/`
  Contributor *Jul. 2019 – present*

Teaching Experience

- **Algorithmic Robotics (COMP 450/550)** Rice University, Houston
  Guest Lecturer *Nov. 2022*
- **Graduate Seminar (COMP 600)** Rice University, Houston
  Instructor Assistant *Sept 2022*
- **Algorithmic Robotics (COMP 450/550)** Rice University, Houston
  Guest Lecturer *Nov. 2021*
- **Artificial Intelligence (COMP 440/557)** Rice University, Houston
  Teaching Assistant *Aug. 2019 – Dec. 2019*
- **Probabilistic Algorithms and Data Structures (COMP 480/580)** Rice University, Houston
  Teaching Assistant *Jan. 2019 – May 2019*
- **Algorithmic Robotics (COMP 450/550)** Rice University, Houston
  Teaching Assistant *Aug. 2018 – Dec. 2018*
- **Rice DataScience Bootcamp** Rice University, Houston
  Teaching Assistant *Aug. 2018*
- **Statistical Machine Learning (COMP 440/540)** Rice University, Houston
  Teaching Assistant *Jan. 2018 – May. 2018*

Service

Reviewer: *IROS*, *ICRA*, *RAL*, *TMECH*, *TRO*

Invited Talks: TU Berlin, *IEEE* RAS School,

Organized Workshops: "Evaluating Motion Planning Performance ", *IROS* 2022

Skills/Other

Software: ROS, Keras, Tensorflow, OMPL, MoveIt

Programming: C/C++(Expert), Python(Expert), Java(Intermediate), MATLAB(Intermediate)

Languages: Greek(Mother Tongue), English(Excellent), German(Good)

Social: Officer of Rice University's CS-GSA, Graduate Wellbeing Peer

Publications

[1] C. Chamzas*, M. Lippi*, M. C. Welle*, A. Varava, L. E. Kavraki, D. Kragic "Comparing Reconstruction-and Contrastive-based Models for Visual Task Planning", *IEEE/RSJ International Conference on Intelligent Robots and Systems, 2022 (IROS)*, 2022.

[2] Y. Lee, C. Chamzas, and L. E. Kavraki "Adaptive Experience Sampling for Motion Planning using the Generator-Critic Framework", *IEEE Robotics and Automation Letters (RAL), 2022.*

[3] C. Chamzas*, F. Eweje* , L. E. Kavraki, E. L. Chaikof "Human Helath and Equity in an Age of Robotics and Intelligent Machines", *National Academy of Medicine Perspectives*, 2022.

[4] C. Chamzas, A. Cullen , A. Shrivastava, L. E. Kavraki "Learning to Retrieve Relevant Experience for Motion Planning", *IEEE International Conference on Robotics and Automation (ICRA)*, 2022.

[5] C.Quintero-Peña*, C. Chamzas*, Z. Sun, V. Unhelkar, L. E. Kavraki "Human-Guided Motion Planning in Partially Observable Environments", *IEEE International Conference on Robotics and Automation (ICRA)*, 2022.

[6] C. Chamzas, C. Quintero-Peña, Z. Kingston, A. Orthey, D. Rakita, M. Gleicher, M. Toussaint, L. E. Kavraki "MotionBenchMaker: A tool to Generate and Benchamark Motion Planning Datasets", *IEEE Robotics and Automation Letters (RAL)*, 2022.

[7] M. Moll, C. Chamzas, Z. Kingston , L. E. Kavraki "HyperPlan: A Framework for Motion Planning Algorithm Selection and Parameter Optimization", *In IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2021.

[8] Z.Kingston, C. Chamzas, L. E. Kavraki "Using Experience to Improve Constrainted Planning on Foliations for Multi-Modal Problems", *In IEEE/RSJ International Conference on Intelligent Robots and Systems(IROS)*, 2021.

[9] C. Chamzas, Z. Kingston, C.Quintero-Peña, A. Shrivastava, L. E. Kavraki "Learning sampling distributions using local 3D workspace decompositions for motion planning in high dimensions", *IEEE International Conference on Robotics and Automation (ICRA)*, 2021. **Top-4 finalist for best paper in Cognitive Robotics**

[10] C. Quintero-Peña*, C. Chamzas*, V.Unhelkar, L.E.Kavraki "Motion Planning via Bayesian Learning in the Dark", *In ICRA2021: Workshop on Machine Learning for Motion Planning*, 2021.

[11] E. Pairet, C. Chamzas, Y. Petillot, L. E. Kavraki "Path Planning for Manipulation using Experience-driven Random Trees", *IEEE Robotics and Automation Letters (RAL)*, 2021.

[12] D. Chamzas, C. Chamzas, K. Moustakas "cMinMax: A Fast Algorithm to Find the Corners in an N-dimensional Convex Polytope", *International Conference on Computer Graphics Theory and Applications (GRAPP)*, 2021.

[13] C. Chamzas*, M. Lippi* , M. C. Welle*, A.Varava, A.Marino, D. Kragic, L.E.Kavraki "Structuring Latent Representation with Minimal Supervision for Robotic Tasks ", *3rd Robot Learning Workshop in NeurIPS*, 2020.

[14] C. Chamzas, A. Shrivastava, L. E. Kavraki "Using Local Experiences for Global Motion Planning", *IEEE International Conference on Robotics and Automation (ICRA)*, 2019.