

Curriculum Vitae/Resume

Gabriel Kosmacher

<https://kennykos.github.io/>

Urbana, Illinois, United States

+1 773-986-0852

Education	University of Illinois at Urbana-Champaign , Champaign, IL Bachelor of Science in Mathematics & Computer Science <u>Minors</u> : Computational Science and Engineering <u>GPA</u> : overall 3.87/4.0 <u>Dean's List</u> : Fall 2019, Spring 2020, Fall 2020	August 2019-Present Graduation: May 2023
Presentations	<i>I know I'm Right, But Does my Phone?</i> (TRB 2023, NREL SULI 2022) <i>Seasonality and Immunity in Disease Dynamics</i> . (UIC UMS 2022, UIUC URS 2022) <i>Toric and Semitoric Polygon Packing</i> . (IGL Spring 2022, Fall 2021, Spring 2021)	
Research Experience	National Renewable Energy Laboratory Dr. K. Shankari Worked on <i>Evaluating The Interplay Between Trajectory Segmentation and Mode Inference Errors</i> <ul style="list-style-type: none">• Introduced a framework to evaluate accuracy of trip length computations and mode inference for continuous mode-segmented trajectories on groups of trips.<ul style="list-style-type: none">– Developed a temporal alignment algorithm to classify temporal and spatial errors in a single metric and implemented the algorithm in python https://github.com/kennykos/mobilitynet-analysis-scripts– Applied the framework to the NREL OpenPATH pipeline using MobilityNet, a public dataset containing information from three <i>artificial timelines</i> that cover 15 different travel modes.– Evaluated travel data collected on smartphones on android and iOS operating systems that was post-processed by different machine learning algorithms.• Results to be presented at the Transportation Research Board Annual Meeting 2023.	June 2022-August 2022
	University of Illinois Department of Mathematics Dr. Zoi Rapti Worked on <i>Seasonality and Immunity in Disease Dynamics</i> <ul style="list-style-type: none">• Co-designed and Co-developed a dynamical model with another undergraduate student and Professor Rapti to investigate <i>Daphnia dentifera</i> disease dynamics.• Presented results at the University of Illinois Chicago Undergraduate Mathematics Symposium 2022 and the University of Illinois Urbana-Campaign Undergraduate Research Symposium 2022.	Jan 2022-Present
	Illinois Geometry Lab Dr. Joey Palmer Worked on <i>Toric and Semitoric Packing Capacities</i> <ul style="list-style-type: none">• Investigated packing capacities with a team of undergraduate student and Professor Palmer to exactly compute packing capacities.<ul style="list-style-type: none">– Developed an algorithm to explicitly compute toric packing capacities and implemented the algorithm in python https://github.com/CoulsonZhang/Semi-toric_Packing_Capacity.– Solved the equivariant semitoric perfect packing problem.• Co-authored a manuscript currently in the journal submission process: https://arxiv.org/abs/2210.06415.• Presented results at University of Illinois Urbana-Campaign Illinois Geometry Lab Poster Presentation Spring 2021, Fall 2022, Spring 2022.• Received 2022 Illinois Geometry Lab Outstanding Research Award.	January 2021-May 2022
Grants/Awards	2022 Illinois Geometry Lab Outstanding Research Award 2021 Americorps Education Award – \$1,612.43 2020-21 Heery Scholarship Recipient – \$4,500	

Work
Experience

University of Illinois Department of Computer Science October 2022-Present
CS 450 Numerical Analysis Course Assistant

- **Graded** Mathematical & CS theory homework problems for an advanced undergraduate/graduate course.

National Renewable Energy Laboratory June 2022-August 2022
Science Undergraduate Laboratory Internship

- Developed continuous mode-segmented trajectory framework (see research section above).
- Worked with a **team of 3 interns** on statistical methods for trajectory **error propagation**.
- Participated in numerous Department of Energy **professional development activities and workshops**.

University of Illinois Department of Mathematics August 2021-May 2022
Mathematics and Statistics Student Support Center

- Hosted **drop in office hours** for all mathematics courses up to Calculus II.

Community
Involvement

Chicago Pre-College Science and Engineering Program October 2022-Present
STEM Mentor

- Assisted in the teaching of a data-science curriculum at Kenwood Academy high school in Chicago for 11th and 12th graders.
- Developed a plant biology and environmental sustainability curriculum for 2nd graders which will be taught at the Urbana Neighborhood Connections Center.

Students for Environmental Concerns January 2020-Present
Secretary (August 2021-May 2022), President (August 2022-Present)

- Lead an executive board of 10 undergraduates and an organization with 50+ general members.
- Oversee fundraising of \$500+ per academic semester.
- Develop and oversee various projects
 - **Develop and teach curriculum** regarding environmental ecology and sustainability to Urbana elementary school students.
 - Work with Facilities and Services to **implement a green-rooftop** on the engineering campus.
 - Run a **community garden** with a local non-profit.
 - Generate and publish independent **University of Illinois System Green Investment Report**.
 - Publish the Green Observer **Environmental Magazine**.
 - Implement **Illinois Climate Action Plan** objectives.

Illinois Student Government August 2019-May 2020
Champaign County Board Liaison

- Served as Quorum member for the Student Government Department of Governmental Relations.
- Attended Champaign County Board meetings and engaged in discussion with council members to build and maintain healthy relations between the Illinois Student Government and Champaign County.
- Co-authored resolutions regarding criminal justice.