

# JACK KREBSBACH

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[www.github.com/jackkrebsbach](https://www.github.com/jackkrebsbach)

## EDUCATION

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### University of Colorado Boulder

Ph.D. Applied Mathematics

*Expected Spring 2029*

### Hope College

B.S. Mathematics

Concentration in Statistics

Overall GPA: 3.97

*Conferred May 2024*

## AWARDS AND HONORS

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- Pi Mu Epsilon Outstanding Speaker Award at Joint Mathematics Meeting *January 2024*
- Erik Aasen Scholarship *August 2022*
- Joint Mathematics Meetings Honourable Mention Poster *January 2020*
- John H. Kleinheksel Mathematics Award *May 2019*
- Pi Mu Epsilon Mathematics Honor Society Inductee *May 2019*
- Hope College Presidential Scholarship *August 2018*

## GRANTS

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- Pi Mu Epsilon Travel Grant, 2024 Joint Mathematics Meetings, \$1200
- Krebsbach, J., "Using Machine Learning and Drones to Estimate Vegetation Density in Coastal Sand Dunes," \$3,000. (May 10, 2020 - April 30, 2021). Funded by the National Aeronautics and Space Administration (NASA), under award number 8oNSSC2oMo124, Michigan Space Grant Consortium (MSGC)
- American Mathematical Society Travel Grant, 2020 Joint Mathematics Meetings, \$400

## EXPERIENCE

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### Undergraduate Researcher

*Hope College Mathematics & Statistics Department*

May 2019 - May 2024

*Holland, MI*

- Main work consists of using machine learning and unmanned aerial systems to map surface composition in Lake Michigan sand dunes
- Conducted field work, flying drones to capture multi-spectral imagery and acquire ground-based photography at Saugatuck Harbor Natural Area.
- Performed big data analysis in R and Python, generating feature imagery, sampling training data, and training machine learning algorithms
- Gave numerous talks and presented several posters at Join Mathematics Meetings, Geological Society Association Meeting, Pi Mu Epsilon Meetings, Hope College colloquium, and Mathfest

**REZA INC.***Co-Founder*

May 2019 - Present

*Detroit, MI*

- Co-created REZA INC., a VC backed light-up footwear brand dedicated to inspiring people to 'Light Your Own Path'
- Completed residency at Techstars Sports Accelerator Powered by Indy (2020)
- Sourced components and completed shoe development in Taiwan (Nov 2020 – Apr 2021, March 2023 – June 2023)
- Sold over 2,000 pairs and acquired wait list of 70K+

**Mobile App Developer***Favs*

July 2023 - September 2023, April 2024 - June 2024

*Remote*

- Full stack software developer for social media start-up
- Assisted and interviewed candidates for full time roles and two front end engineers
- Technologies: Amazon Web Services, React Native, Expo

**Teaching Assistant***Hope College*

January 2024 - May 2024

*Holland, MI*

- Assisting students course material for accelerated statistics (Math 219) and statistics for data science (Math 313)
- Grade lab assignments completed in R

**Accenture Student Consultant***Hope College Center for Leadership*

January 2024 - May 2024

*Holland, MI*

- Student consultant project for Accenture IT company
- Research and ranking of the Top 3-5 SC Analytics Platforms including a comparative analysis
- Demystifying the generative AI vs traditional AI components

**Ford Motor Company***Internship*

June 2022 - August 2022

*Dearborn, MI*

- Worked as an intern in software product development
- End to end data pipeline sourced from features in vehicles to create data visualizations using SQL, Python, Putty, Amplitude.
- Created a clinic to evaluate the digital owner's manual found in the entertainment system in the Ford F150 Lightning
- Presented recommendations to executives based on insights gained from study

**Mathematics and Computer Science Tutor***Hope College Academic Success Centre*

August 2019 - May 2020

*Holland, MI*

- Hired as a tutor for the Software Design & Implementation CS course using the Java programming language
- Led group of four students through the Fall semester of 2019 assisting in course material and projects
- Worked in the Hope College Math Lab for lower and upper-level mathematics courses in the Spring of 2020
- Provided mathematical guidance to students on an individual and group basis in help sessions.

**Youth Ambassador to the Philippines***U.S State Department*

July 2016 - April 2017

*Biñan, Philippines*

- High-school exchange student in the Philippines supported by the Yes-Abroad Kennedy-Lugar Scholarship program
- Lived with a Filipino family for a period 10-months in Biñan, Laguna
- Studied at Jacobo national high school and University of Perpetual Help

## TECHNICAL STRENGTHS

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### Computer Languages Technologies & Frameworks

R, Python, Jupyter, MATLAB, JavaScript, Typescript, Java, HTML, SCSS, CSS  
Git, Vim, Linux, SQL, QGIS, Node.js, React, Next.js, React Native,  
RStudio, Jupyter, Autodesk Inventor, Agisoft Metashape  
Vercel, Google Analytics, Shopify,

## PUBLICATIONS IN PREPARATION

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Krebsbach, J., Yurk, B. P., DeVries-Zimmerman, S. J., Pearson, P., Hansen, E. C. "Mapping vegetation in Lake Michigan sand dunes using unoccupied aerial systems and machine learning" *In Preparation*

## SELECTED PRESENTATIONS

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- Krebsbach, J., (Yurk, B. P., Mentor), Joint Mathematics Meeting, Talk, "Mapping Plant Populations Using Drones and Machine Learning", San Francisco, CA. (January 4, 2024)
- Krebsbach, J., (Yurk, B. P., Mentor), 48th Annual Pi Mu Epsilon Conference, Talk, "Mapping Vegetation in Lake Michigan Dunes with XGBoost", Miami, OH. (September 29, 2023)
- Krebsbach, J., Yurk, B. P., DeVries-Zimmerman, S. J., Pearson, P., Hansen, E. C. International Conference on Aeolian Research, Poster. "Mapping vegetation in Lake Michigan sand dunes using unoccupied aerial systems and machine learning," Las Cruces, NM. (July 13, 2023)
- Krebsbach, J., Yurk, B. P. Mathfest, 2021, Talk, "Modeling Vegetation Density," Online. (August, 5, 2021)
- Krebsbach, J. (Yurk, B. P., Mentor). Midstates Consortium for Math and Science Undergraduate Research Symposium, Talk, "Dunes & Drones: Using machine learning to map vegetation with drone- and ground-based photography," Online. (November 7, 2020)
- Krebsbach, J., Yurk, B. P. Joint Mathematics Meeting, Poster, "Mapping dune vegetation using drones, ground photography, and machine learning," Denver, CO. (January 17, 2020).
- Krebsbach, J., Yurk, B. P., Pearson, P. T., Stid, J., Hansen, E. C. Geological Society of America Annual Meeting, Poster, "Vegetation and Topography Mapping of Coastal Dune Complexes Using Small Unmanned Aerial Systems and Ground-Based Imagery," Phoenix, AZ. (September 22, 2019)
- Krebsbach, J., (Yurk, B. P., Mentor), PME Mathfest, Talk, "Dunes and drones: A machine learning approach to mapping dune vegetation using small unmanned aerial systems and ground based photography, Cincinnati, OH. (August 1st, 2019)

## MEDIA

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**Grand Rapids Magazine** <https://www.grmag.com/look-feel/style/fresh-kicks-bright-future/> November 2023