

Olivia Walch

FOUNDER · APPLIED MATH PHD

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Summary

I'm the CEO of Arcascope, a company making software to help people live more in line with their body's circadian rhythms. I got my Ph.D in Applied Mathematics from the University of Michigan in 2016 and have studied the mathematics of sleep for the last ten years. Outside of sleep, I was co-editor of *Political Geometry*, a volume on the mathematics of gerrymandering, with Moon Duchin.

Education

College of William & Mary

B.S. IN MATHEMATICS AND BIOPHYSICS

Williamsburg, VA

Sept. 2007 - May 2011

University of Michigan

PH.D APPLIED MATHEMATICS

Ann Arbor, MI

September 2016

Work Experience

Arcascope

CEO

Chantilly, VA

2019 - Present

- Founded company aimed at taking biophysics + ML to the consumer market, targeting sleep and circadian rhythms via mobile apps first
- Currently leading a team of six to take an app for shift workers, *Shift*, to market

University of Michigan

ADJUNCT RESEARCH INVESTIGATOR

Ann Arbor, MI

2019 - Present

- 0% appointment; research focuses on open source sleep algorithms using data from consumer wearable devices

Honors & Awards

2016	Co-winner , Peter Smereka Award for Best Thesis	Ann Arbor, MI
2016	First place , UMich "Mobile Apps Challenge"	Ann Arbor, MI
2016	Second Place Overall Prize and Disney Emerging Technology Winner , MHacks	Ann Arbor, MI
2015	First Overall Prize and Microsoft Prize Winner , HackNTU	Taipei, Taiwan
2015	Grand Prize and Best Use of Wolfram Technology Winner , MHacks	Ann Arbor, MI
2012	National Science Foundation Graduate Fellowship , NSF	Ann Arbor, MI
2011	Rhodes Scholar Finalist , Georgia/Virginia District	Williamsburg, VA
2010	Co-Gold medalist , International University Physics Competition	Williamsburg, VA
2007	1693 (Murray) Scholar , William and Mary	Williamsburg, VA

Other fun stuff

Squigglish

Developed mobile app for animating line drawings; downloaded more than 250k times

Entrain

Student project app for helping people cross time zones faster by seeking and avoiding light at the right times; featured on CNN and in *O Magazine*

Sketch Anything

Developed a (currently defunct) app to convert images and drawings into step-by-step drawing guides using Fourier series

You Can Try Again

My sci-fi mini-comic, published from Silver Sprocket and available for free online

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- Cheng, P., Walch, O., Huang, Y., Mayer, C., Sagong, C., Cuamatzi Castelan, A., ... & Drake, C. L. (2021). **Predicting circadian misalignment with wearable technology: validation of wrist-worn actigraphy and photometry in night shift workers.** *Sleep*, 44(2), zsa180.
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- Bowman, C., Huang, Y., Walch, O. J., Fang, Y., Frank, E., Tyler, J., ... & Forger, D. B. (2021). **A method for characterizing daily physiology from widely used wearables.** *Cell reports methods*, 1(4), 100058.
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- Walch, O. J., Cochran, A., & Forger, D. B. (2016). **A global quantification of “normal” sleep schedules using smartphone data.** *Science advances*, 2(5), e1501705.
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- Vartanian, G. V., Li, B. Y., Chervenak, A. P., Walch, O. J., Pack, W., Ala-Laurila, P., & Wong, K. Y. (2015). **Melatonin suppression by light in humans is more sensitive than previously reported.** *Journal of biological rhythms*, 30(4), 351-354.
- Johnson, C., & Walch, O. (2012). **Critical exponents: old and new.** *The Electronic Journal of Linear Algebra*, 25, 72-83.
- Johnson, C., & Walch, O. (2012). **Commuting pairs of patterns and symmetric realizations.** *The Electronic Journal of Linear Algebra*, 25, 84-91.
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