

# Michael W. Karlovich, B.S.

## *Curriculum Vitae 2021*

### **EDUCATION**

- Union College, Schenectady, NY
- September 2011 - June 2015
- Major: Neuroscience
- Minor: Philosophy (focus in philosophy of mind, phenomenology, and epistemology)

### **PUBLICATIONS**

**Karlovich MW**, Wallisch P. Scintillating Starbursts: Concentric Star Polygons Induce Illusory Ray Patterns. (2021). *i-Perception*. doi:10.1177/20416695211018720

Wallisch, P., Mackey, W., **Karlovich, M.**, & Heeger, D. J., (2021). The Visible Gorilla: Fast-Moving Objects Override Endogenous Attention. *arXiv preprint arXiv:1908.05736*.

**Preprint above. Revision currently in peer-review**

Cihan, E., Devinsky, O., Hesdorffer, D.C., Brandsoy, M., Li, L., Fowler, D.R., Graham, J.K., **Karlovich, M.W.**, Yang, J.E., Keller, A.E. and Donner, E.J. & Friedman, D., (2020). Temporal trends and autopsy findings of SUDEP based on medico-legal investigations in the United States. *Neurology*, 95(7), e867-e877.

Cihan, E., Hesdorffer, D.C., Brandsoy, M., Li, L., Fowler, D.R., Graham, J.K., **Karlovich, M.**, Donner, E.J., Devinsky, O. & Friedman, D., (2020). Socioeconomic disparities in SUDEP in the US. *Neurology* 94, no. 24 (2020): e2555-e2566.

Wallisch, P. & **Karlovich, M.**, (2019). Disagreeing about Crocs and socks: Creating profoundly ambiguous color displays. *arXiv preprint arXiv:1908.05736*

**Preprint above. Revision accepted by *Frontiers Psychology*.**

Tolete, P., Knupp, K., **Karlovich, M.**, DeCarlo, E., Bluvstein, J., Conway, E., Friedman, D., Dugan, P. & Devinsky, O., (2018). Lorcaserin therapy for severe epilepsy of childhood onset: A case series. *Neurology*, 91(18), 837-839.

### **NOTEWORTHY EXPERIENCE**

**Sole Proprietor, Recursia®, LLC**

**Website:** <https://recursia.shop>

**Mar. 2019 - Present**

- Started a business offering products and creative services featuring art and designs made by integrating knowledge of geometry, abstract mathematics, computer science, neuroscience, gestalt psychology, and neuroaesthetics with the mission of using the profits to fund scientific and artistic endeavors
- Developed the name, logo, and website; conceived and designed all 1000+ products offered
- Programmed software to automate numerous company operations, affording ample time and energy to pursue a separate full-time career successfully

## **RESEARCH EXPERIENCE**

### **Research Assistant, EEG Lab, The Nonduality Institute**

**Lake Hill, NY, May 2018 - Present**

**Supervisor: Zoran Josipovic, Ph.D.**

- Conducting neurophysiological experiments on cognition and meditation
- Assists with EEG setup and recording, technical problem solving /troubleshooting, and literature review
- Lead programmer; developing custom analysis pipelines and apps for working with EEG and ECoG data

### **Researcher and Artist, Recursia®, LLC, Mar. 2019 - May 2021**

**Collaborated with NYU neuroscience professor Pascal Wallisch, Ph.D.**

- Discovered and investigated the principles of “Scintillating Starbursts,” a novel class of visual illusion
- First-author of a peer-reviewed article published in the journal, *i-Perception*
- Project featured in dozens of media outlets around the globe
- Finalist in the 2020 *International Illusion of the Year* contest hosted by the Neural Correlate Society
- Used the Scintillating Starburst as the basis of the logo of my company, Recursia, LLC; was awarded a registered trademark

### **Researcher and Artist, Fox Lab, Center for Neural Science**

**NYU, NYC, NY, May 2019 - Aug. 2019**

**Collaborated with Pascal Wallisch, Ph.D**

- Researched the cognitive influences of perceptual disagreements among people
- Co-developed the first purposely-created ambiguous color stimulus; co-responsible for stimulus creation, experiment design, programming analyses, and drafting and editing of the manuscript (in peer-review; preprint available)
- Our work was featured in popular media outlets, *Scientific American*, *BuzzFeed*, and the *You Are Not So Smart* podcast

### **Consulting Data Scientist, Comprehensive Epilepsy Center**

**Dept. of Neurology, NYU Langone, NYC, NY**

**Dec. 2018 - Mar. 2019**

**Collaborated with Esma Cihan, M.D.**

- Programmed analyses and custom simulations for epidemiological data involving Sudden Unexpected Death in Epilepsy (SUDEP)
- Co-authored two published articles, of which, *Socioeconomic disparities in SUDEP in the US*, was chosen as the featured research for the cover of the June 2020 volume of the *Neurology®* – the most widely read and highly cited peer-reviewed neurology journal

***Note: The following three experiences represent one full-time position with NYU which entailed coordinating research for three projects between two facilities***

### ***NYU Project 1 of 3 - Remaining aspects of the position on the following page***

**Clinical Research Coordinator, Comprehensive Epilepsy Center**

**Dept. of Neurology, NYU Langone, NYC, NY**

**Jun. 2017 - May 2018**

**Supervisor: Orrin Devinsky, M.D.**

- Performed data entry and assisted in managing clinical trials involving cannabidiol (CBD) and other novel interventions for epilepsy
- Co-author of an article published in *Neurology®*; responsible for data analysis, producing figures, reporting results, and drafting and editing of the manuscript

**NYU Project 2 of 3**

**Clinical Research Coordinator, Cognition and Epilepsy Lab,  
Dept. of Neurology U.S. Dept. of Veteran Affairs, NYC, NY  
Oct. 2017 - May 2018**

**Supervisor: Beth Leeman-Markowski, M.D.**

- Investigated cognitive decline and neurodegeneration in patients with epilepsy using EEG, eye-tracking, and cognitive data
- Performed subject recruitment, subject payment, data collection, data entry, data analysis, and technical problem-solving

**NYU Project 3 of 3**

**Clinical Research Coordinator, SUDC Registry  
Dept. of Neurology, NYU Langone, NYC, NY  
Jun. 2017 - Sep. 2017**

**Supervisor: Orrin Devinsky, M.D.**

- Performed data entry, organization, and analysis of the largest known database of death records and autopsy reports of Sudden Unexplained Death In Children (SUDC) for the "Sudden Unexplained Death In Children Registry and Research Collaborative"

**INTERNSHIPS**

**Research Intern, Fox Lab, Center for Neural Science, NYU  
NYC, NY: June 2015 - Mar. 2019**

**Supervisor: Pascal Wallisch Ph.D.**

- Extended the work of my senior undergraduate thesis on the principles of capturing visual attention
- Responsible for subject payment and outreach; data collection and preprocessing; assisted with experiment design, data analysis, and the drafting and editing of the manuscript (in peer-review; preprint available)

**Research Intern, Cognitive Neurophysiology Lab  
Dept. of Neurology, NYU Langone, NYC, NY  
May 2016 - Jun. 2017**

**Supervisor: Lucia Melloni, Ph.D.**

- Investigated neural correlates of visual consciousness via behavioral data and intracranial brain recordings of patients exhibiting the rare condition, "blindsight"
- Managed and expanded custom neural data analysis pipeline

**Thesis student, Union College, Schenectady, NY  
Aug. 2014 - Jun. 2015**

**Co-advised by Pascal Wallisch Ph.D. (NYU) & Cay Hanley, Ph.D. (Union College)**

**Grade earned: A**

- Thesis title: ***Mindfulness: Relationship Between Self-Report And Endogenous And Exogenous Resource Regulation***
- Replicated and extended the work of my 2014 NYU summer internship; additionally conducted experiments on the effect of mindfulness on attention and reported self-awareness

**Research Intern, Cognition and Perception Lab  
Center for Neural Science, NYU, NYC, NY  
Summer 2014**

**Supervisor: Pascal Wallisch, Ph.D.**

- Conducted research and experiments on visual attention
- Responsible for data collection, subject payment, and data coding; assisted with experiment design
- Gained research experience by learning how to program in MATLAB; to collect and analyze psychophysical data; to run and experiment and make publishable figures
- Broadened my experience by interacting with NYU professors and graduate students

## **MEDIA FEATURES**

**IFLScience (www.iflscience.com)**

***Boggle Your Brain With The Best Illusion Of The Year Contest 2020***

By: IFLS staff; Dec. 18<sup>th</sup> 2020

***You Are Not So Smart Podcast***

***Episode 176 (pt. 1 & 2): How a divisive photograph of a perceptually ambiguous dress led two researchers to build the nuclear bomb of cognitive science out of socks and Crocs***

Pt.1 Aired Mar. 9, 2020; Pt. 2 Aired Mar. 25, 2020

Hosted by David McRaney

**Scientific American®**

***A Pair of Crocs to Match the Dress: New research casts light on viral illusions***

By Susana Martinez-Conde and Stephen L. Macknik; Dec. 12, 2019

***Twenty-Eight Shades of Shoes: New research using Crocs explains the dress***

By Stephen L. Macknik; Jan. 23, 2020

**Buzzfeed®**

***First There Was “The Dress.” Now We’ve Got These Crocs***

By Dan Vergano; Jul. 3, 2019

## **PRESENTATIONS**

**The Roots of Disagreement - Think & Drink, “Subject” Bar**

188 Folk St. NYC, NY: Nov. 5th, 2019

**Lorcaserin Therapy for Severe Epilepsy of Childhood Onset: A Case Series**

NYU Langone Health Neurology Symposium, Tisch Hospital, NYC, NY May 2018

***Mindfulness: Relationship Between Self-Report And Endogenous and Exogenous Resource Regulation***

Steinmetz Symposium, Union College, Schenectady, NY: May 2015

## **PROGRAMMING**

- HTML & CSS
- Python
- MATLAB
- R
- SQL

## **SOFTWARE SKILLS**

- Adobe CC Suite: Acrobat DC, Audition, Dimension, Illustrator, Photoshop, Premier
- Command Terminal
- Microsoft, Mac, and Linux
- Remote computing (VPN, FTP, SSH, VNC)
- Web design & E-commerce setup
- Microsoft Office Suite

## **RESEARCH & ANALYSIS SKILLS**

- Academic literature reviews
- Computational image processing
- Digital signal processing
- EEG recording and analysis
- Electrocardiography analysis
- Eye-tracking
- Familiar with AWS; Amazon M-Turk requester
- General scientific programming and data visualization
- Machine learning and artificial intelligence (novice)
- MRI analysis (novice)
- Multidimensional data analysis
- Scientific writing and communication
- Statistical thinking & analysis
- Supercomputing cluster experience
- Task automation via batch files and schedulers
- Text, image, and audio data analysis & visualization
- Web scraping
- Working with massive spreadsheets and databases

## **PROFESSIONAL ATTRIBUTES**

- Cogent training and experience in conducting extensive literature searches, designing and carrying out rigorous experiments, using frequentist statistical methods, data analysis and visualization, and publishing results in academic journals
- Highly creative individual adept in logical and computational thinking, complex problem-solving, first-principles reasoning, and applying interdisciplinary approaches
- Able to communicate and harmoniously work with all types of artistic, business, scientific, engineering, and academic minded people
- Excel at both individual and collaborative projects; comfortable leading and being led

## **VOLUNTEER POSITIONS**

### **Member of the Board of Directors**

#### **Foundation for the Study of American Yoga, Bovina Center, NY**

**Jun, 2016-Present**

A 501(c)(3) non-profit organization incorporated in 1969, The Foundation for the Study of American Yoga maintains an educational center for the continued development, practice, and teaching of American Yoga: a synthesis of various forms of yoga, mindfulness, meditation, alignment, tension-releasing exercises, and breathing techniques.

## **HOBBIES**

- Amateur woodworker
- Certified meditation and mindfulness instructor
- Gourmet cooking
- Electric bass guitar
- Writing poetry