Mark Changizi

rare research expertise

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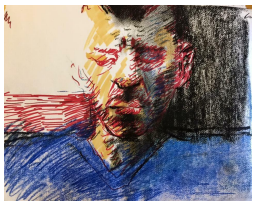

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Skills

QUANTITATIVE ANALYST: Ph.D. in applied mathematics and computer science, with 25 years of wisdom rigorously solving data-rich problems in a variety of complex areas, from artificial intelligence to neurotechnology to human factors to marketing.

HUMAN EXPERIENCE: Expertise at the border of cognition and computation, including behavioral science, perception, human factors, UX, HCI, HMI, augmented reality, affective computing and AI. See his Human Factory.

MARKETING and PR: 10 years online marketing for his startup, VINO OPTICS, leading to hundreds of magazine and newspaper stories, and tens of thousands of sales. 15 years of proactive marketing and PR of his discoveries and his line of books.

CONSUMER INSIGHTS: Research prowess in the realm of understanding the human perceptual experience with a brand. (E.g., he keynoted the 2010 IIR USA Shoppers Insight conference.)

ENTREPRENEUR: Proficient at transforming abstract ideas into reality, such as his medical device company, VINO OPTICS, emanating from a research discovery of his on the origins of color vision. Has two patents, one the backbone of VINO OPTICS, another with Yamaha and Caltech concerning a novel augmented reality device for enhanced driver safety.

LEADERSHIP: 20 years of experience managing and directing research teams, including at University College Cork (computer science), Duke University (psychology), Caltech (vision) and Rensselaer Polytechnic Institute (cognitive science).

COMMUNICATION: Has given more than one hundred keynotes worldwide, often appears on television such as Brain Games on National Geographic, given several TED talks, written for dozens of magazines such as WIRED and WSJ, and is working on his sixth book.

Experience

2ai Labs, Institute for the Study of Human and Machine Cognition / VP Research and Development, Director of Human Cognition
http://2ai.org
2010 - PRESENT, Miami, FL

A private think tank and start-up generator co-founded by him with the aim of producing innovative research in cognitive science and artificial intelligence, and spinning off start-ups. VINO OPTICS (below) was their first start-up, based on patents emanating from his color research, and there are others on the conveyor belt.

VINO OPTICS / Founder & CEO; VP Marketing http://vinOOptics.com
2010 - PRESENT, Miami, FL

This medical device company emanates from a major 2006 discovery of his that primate red-green vision evolved for detecting oxygenation modulations of blood under the skin so that primates could see emotions, health and state. Out of that discovery, he and a colleague were able to patent the first and only optical filter technology that passively augments visibility of these oxygenation modulations, as well as related technology.

VINO OPTICS serves two main markets. (1) Medical personnel wear their vein glasses, protective eyewear that enhances visibility of veins and health signs. They also sell distinct wound care technology that augments visibility of blood pooling and poor circulation. Their vein glasses technology has been shown to work in the *Journal of Emergency Medical Services*. (2) Colorblind people wear one of their technologies which enhances the signal that red-green vision is for and that color deficients are deficient at. Unlike their competitors, their tech has been shown to aid colorblindness in *Invest Ophth Vis Sci*.

Human Factory / Founder & CEO
https://humanfactorylab.com/
2009 - PRESENT, Miami, FL

Lab and consulting firm bringing cutting edge insights from the cognitive sciences to the next generation of human-centered technology. Has worked with more than 50 companies, with applications in human factors, consumer experience, UX, HMI, UI, augmented reality, interfaces, affective computing, health, entertainment, movies, video games.

Yamaha / Augmented Reality & HMI Consultant
2016 - Present, Miami, FL

Consultant developing and testing novel technologies for (1) enhanced perception of a motorist's surrounding for safety and a richer experience, and (2) enriching the driver-vehicle interaction. This work has led to a patent and multiple prototypes.

MONA Museum / Guest Scientist, Human-Tech Interface Curator

2014 - 2017, Hobart, Tasmania, Australia

Invited by MONA founder, David Walsh, to be one of four external guest curators for a six month exhibition, On the Origin of Art, at his famous art museum in Hobart, Australia. The show had international press, and highlighted Mark's research on the origins of writing, speech, music, and the arts. It led to a joint book with the same title with the other invited guest curators, Steven Pinker, Geoffrey Miller, and Brian Boyd.

Department of Cognitive Science, RPI / Assistant Professor

2007 - 2010, Troy, NY

Researcher in cognitive science, as well as two courses per semester teaching. Many publications while here, as well as his first trade (i.e., non-academic-monograph) book, *VISION rEVOLUTION*, about the function and design of vision, covering many of his own discoveries in the area of visual perception, including why we evolved color vision, why we see illusions, why some animals (like us) have forward-facing eyes, how we came to have writing. Directed a team of researchers in his lab.

Caltech / Sloan-Swartz Fellow in Theoretical Neurobiology

2002 - 2006, Pasadena, CA

Mark was awarded a two year Sloan-Swartz fellowship at Caltech. He then extended it to two more years via winning an NIH fellowship. He collaborated with vision scientist Shinsuke Shimojo. With great independence, and inspiration from those around him, a wide variety of his discoveries came to fruition while here.

Department of Neuroscience, Duke / Postdoctoral Fellow

1999 - 2002, Durham, NC

Researcher in the brain sciences, Mark worked in the lab of Dale Purves, and then in the lab of Ted Hall. He studied vision and the ontogeny of thirst and hunger behavior, and had tremendous freedom to work on a variety of other research areas, leading for example to his "perceiving the present" work on why we see illusions.

Schafer Corporation / Neurotechnology Researcher

1998 - 1999, Fairfax, VA

Researcher in neurotechnology and computational neuroscience. Developed novel computational and statistical methods and software for detecting the presence of correlated activity in neuronal populations for a new neuronal ensemble recording device.

Department of Computer Science, University College Cork / Assistant Professor

1997 - 1998, Cork, Ireland

Researcher in cognitive and computer science, as well as one introductory computer algorithms course per semester teaching. Worked here on his first book, The *Brain from 25000 Feet*.

Misc Teaching / Research Positions while undergrad / grad

1989 - 1997,

- 1993-1997. Theor neuroscience research, w/ Dr. Cherniak, UMD
- 1996-1997. Teaching assistant for calculus
- 1994-1997. Lecturer for logic, and also education-major math
- 1992-1995. Lab teacher, physics and astronomy, George Mason
- 1991. Post-grad researcher, Fly's Eye, University of Utah
- 1990-91. Undergrad researcher for SLAC
- 1990. Undergrad researcher at FermiLab, Experiment 771
- 1989. Undergrad researcher in physics lab, Prof. Deaner, UVA

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Education

University of Maryland / PhD, Applied Mathematics

1992 - 1997, College Park, MD

PhD was in applied mathematics, more specifically on complexity theory, algorithms, theory of computation, and mathematical logic. In addition to being the usual teaching assistant -- often the primary lecturer -- in a variety of math classes, and teaching physics and astronomy at nearby George Mason University, he worked in the laboratory of theoretical neuroscientist and philosopher Chris Cherniak, thereby also acquiring a background in the cognitive and brain sciences, allowing him to later postdoc in those fields, and eventually become a theorist in the field.

University of Virginia / Bachelor of Science, Physics and Math

1987 - 1991, Charlottesville, VA

Double majored in physics and math, and chose the more difficult B.S. rather than B.A. route. Worked as an undergrad researcher during those undergrad years at a variety of physics labs, including FermiLab, Fly's Eye and SLAC.

Thomas Jefferson High School for Science and Technology / Diploma

1986 - 1987, Alexandria,, VA

Applied and was accepted to the new magnet school in northern Virginia the year it opened. This was a great experience, preparing Mark well for his next step at UVA physics and math.