

Albert K. You

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Education

Ph.D. in Bioengineering

UNIVERSITY OF CALIFORNIA, BERKELEY (JOINT WITH UC SAN FRANCISCO)

Advisor: Jose M. Carmena

Berkeley, CA

Sept. 2015 - May 2020 (expected)

B.S. in Biomedical Engineering | Minor in Management

UNIVERSITY OF MINNESOTA, TWIN CITIES

Minneapolis, MN

Sept. 2011 - May 2015

Research Experience

University of California, Berkeley

PH.D. CANDIDATE | ADVISOR: JOSE M. CARMENA

Berkeley, CA

Sept. 2015 - May 2020 (expected)

- Designed and conducted multiple neuroscience projects, examining how the brain learns to control brain-machine interfaces
- Programmed experimental paradigms using Python, Arduino, LabVIEW, and MATLAB
- Decoded neural signals using machine learning techniques into kinematic state-spaces for effector control
- Recorded electrophysiological data from various brain areas in rhesus macaque monkeys
- Analyzed and preprocessed large time-series neural datasets, correlating high-dimensional neural patterns with behavioral outputs
- Presented experimental findings at numerous conferences in the forms of poster presentations and seminar talks. Published multiple papers on neuroprosthetic learning
- Mentored undergraduate and junior graduate students and collaborated on projects

University of Minnesota, Twin Cities

UNDERGRADUATE STUDENT RESEARCHER | ADVISOR: BIN HE

Minneapolis, MN

May 2013 - July 2015

- Analyzed electroencephalography (EEG) data relating mind-body awareness training to brain-computer interface (BCI) performance
- Significantly improved sensorimotor BCI performance of a commercially available EEG headset
- Worked with stroke patients, conducting experiments on the effects of rTMS and BCI on stroke rehabilitation
- Implemented a robotic arm for BCI control in 3D space

Honors & Awards

2018	Outstanding Graduate Student Instructor Award	Berkeley, CA
2017	NSF Graduate Research Fellow	Berkeley, CA
2014	2nd Place at U of MN - Carlson School of Management Biz Pitch Contest	Minneapolis, MN
2014	Frank Louk Scholarship	Minneapolis, MN
2014	Stage I funding from Venture Well (NCIIA) E-team Competition	Hadley, MA
2014	2nd Place Poster Award - IEM Annual Conference and Retreat	Minneapolis, MN
2011	Lee S. Whitson Merit Scholarship	Minneapolis, MN

Publications

- You, Albert K., et al. "Flexible modulation of neural variance facilitates skill learning." *in preparation*.
- Zippi, Ellen L., Albert K. You*, and Jose M. Carmena. "Emergence of distinct coordinated patterns in subpopulations within motor cortex." *in preparation*.
- Liu, Bing*, Albert K. You*, Amy Orsborn, and Jose M. Carmena. "The rate of neuroprosthetic learning is invariant to initial levels of closed-loop decoder adaptation" *in preparation*.
- You, Albert K., et al. "Flexible modulation of neural variance facilitates neuroprosthetic skill learning." *bioRxiv* (2019): 817346.
- You, Albert, Ellen L. Zippi, and Jose M. Carmena. "Large-Scale Neural Consolidation in BMI Learning." *2019 9th International IEEE/EMBS Conference on Neural Engineering (NER)*. IEEE, 2019.
- You, Albert, et al. "Neural Correlates of Control of a Kinematically Redundant Brain-Machine Interface." *2019 9th International IEEE/EMBS Conference on Neural Engineering (NER)*. IEEE, 2019.
- Cassidy, Kaitlin, Albert K. You, et al. "The impact of mind-body awareness training on the early learning of a brain-computer interface." *Technology* 2.03 (2014): 254-260.

Conferences and Talks

- **You, Albert K.** "Flexible Modulation of Neural Variance Facilitates Neuroprosthetic Skill Learning." 2019 Annual CNEP Conference. 5 December 2019.
- **Albert You,** Bing Liu, Abhimanyu Singhal, Suraj Gowda, Helene Moorman, Amy Orsborn, Jose M. Carmena. "Simultaneous exploration and exploitation of neural strategies during neuroprosthetic learning" SfN 2019.
- **Albert You***, Ellen L. Zippi, Jose M. Carmena. "Large-Scale Neural Consolidation in BMI Learning" NER 2019.
- **Albert You,** Abhimanyu Singhal, Bing Liu, Suraj Gowda, Helene Moorman, Amy Orsborn, Jose M. Carmena. "Neural Correlates of Control of a Kinetically Redundant Brain-Machine Interface" NER 2019.
- **Albert You,** Vivek Athalye, Suraj Gowda, Helene Moorman, Jose M. Carmena. "Neural control strategies of a kinematically redundant brain-machine interface" SfN 2018.
- William Liberti III, Xue Gong, **Albert You,** Tom Roseberry, Nuria Llopis, Rui M Costa, Jose M Carmena "Local network coordination supports neuroprosthetic control" SfN 2018.
- **Albert You,** Vivek Athalye, Preeya Khanna, Suraj Gowda, Helene Moorman, Jose M Carmena. "Neural correlates of control of a kinematically redundant brain-machine interface" SfN 2017.
- Nessa Johnson, **Albert You,** James Carey, Ann van de Winckel, Andrew Grande, Bin He. "Improving Motor Recovery after Stroke by Combined Rtms and BCI Training" EMBC 2016.
- **Albert You,** Bin He. "Development of a low-cost BCI solution using the Emotiv platform." IEM Retreat and Conference 2014.
- Abhrajee Roy, Bryan Baxter, **Albert You,** Bin He. "High Definition Transcranial Direct Current Stimulation Modulates Event Related Cortical Synchronization During Mental Imagery: Evidence from Simultaneous tDCS-EEG." EMBC 2014.
- Kaitlin Cassidy, **Albert You,** Emal Alwis, Brad Edelman, Alex Doud, Arman Shahriar, Bin He. "Mind-Body Awareness Training in the Initial Learning of a Sensorimotor Based BrainComputer Interface." SfN 2013.
- Kaitlin Cassidy, Alexander Doud, Emal Alwis, **Albert You,** Arman Shahriar, Bin He. "Accelerating the Initial Learning of a Motor-Imagery Based Brain-Computer Interface through Mind-Body Awareness Training." Conference on Neural Engineering 2013.

Teaching and Mentorship

Graduate Student Instructor | Senior Capstone in BioE

Berkeley, CA

UC BERKELEY, DEPT. OF BIOENGINEERING

Fall 2017

- Prepared and led lectures in medical device design principles
- Held workshops for SolidWorks and Arduino
- Mentored groups of students design medical devices for clients
- Networked with industry experts and invited them for guest lectures

Teaching Assistant | Biomedical Systems Analysis Lab

Minneapolis, MN

UMN TWIN CITIES, DEPT. OF BIOMEDICAL ENGINEERING

Spring 2015

- Trained junior TAs on how to conduct lab experiments
- Set up labs for students
- Organized weekly meetings with other TAs

BMES Student Mentor

Minneapolis, MN

UMN TWIN CITIES

2014-2015

- Mentored BME students in various courses including cell biology, MATLAB, and organic chemistry
- Provided tips for studying, collaborating with others, and finding academic opportunities
- Guided students, offering general knowledge about the major

Teaching Assistant | Bioelectricity and Bioinstrumentation

Minneapolis, MN

UMN TWIN CITIES, DEPT. OF BIOMEDICAL ENGINEERING

Fall 2014

- Corrected homework assignments and created rubrics
- Resolved grading disputes and questions from students

Learning Assistant | Introductory Physics

Minneapolis, MN

UMN TWIN CITIES, DEPT. OF PHYSICS

Fall 2012

- Assisted the instructor during lectures; performed physics demos
- Helped lead discussion sections
- Mentored students during lectures and discussions
- Held office hours and review sessions
- Attended seminars regarding the pedagogy of physics education

Inventions

Maru CX3

Minnesota and Taipei, Taiwan

RUBIK'S CUBE MECHANISM

May 2012

- Designed an interlocking mechanism for the Rubik's cube to increase puzzle stability using SolidWorks
- Sold and marketed the design to Taiwanese toy company Maru
- First known American designer to mass produce a Rubik's cube mechanism
- Was one of the most popular cubes among competitive "cubers" from 2012-2014. Became the model mechanism adopted by other companies

Extracurricular Activity

Venture Well (NCIIA) E-Team Competition

Minneapolis, MN

CORE MEMBER

Oct. 2014 - May 2015

- Collaborated in multidisciplinary group (engineering and business) including students and faculty to design a new medical device
- Conceptualized the device – a vibroconductive calf brace to prevent onset of varicose veins and deep vein thrombosis
- Formulated business strategy – chose to use lean startup approach
- Constructed business proposal documenting market goals of the device
- Received Stage I funding from competition

YouTube

Minneapolis, MN and Berkeley, CA

PARTNER

Sep. 2009 - present

- 25,000 subscribers and over 3 million views
- Create video tutorials for solving the Rubik's cube
- Established a large repository of video reviews for different puzzles
- Collaborated with numerous companies including Hasbro
- Helped successfully market products for companies and manufacturers
- Sponsored by one of the largest puzzle retailers in the US