

David Xing

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EDUCATION

- 2010-2014.* B.S., Biomedical Engineering Major, Electrical Engineering Minor. Columbia University, Cum Laude.
- 2014-2021.* Ph. D. in Biomedical Engineering. Brown University.

WORK EXPERIENCE

- Winter of 2012, 2013, & 2014.* Student aid at Columbia's Undergraduate Admissions office. Sorted student applications.

RESEARCH EXPERIENCE

- Summer of 2010.* Columbia University. Research assistant for Professor Peter deMenocal at Lamont Campus, working on a project to track historic Atlantic ITCZ shifts. Sampled sea cores, isolated foraminifera, and ran analysis on the samples for data collection.
- 2012-2014.* Columbia University. Undergraduate research assistant in the Laboratory for Intelligent Imaging and Neural Computing headed by Professor Paul Sajda. Worked on projects modeling human visual perception. Participated in data collection, and wrote programs to perform data analysis and signal processing in MATLAB and FSL. Performed experiments in EEG and fMRI.
- Summer of 2013.* Food and Drug Administration. Undergraduate research intern at the Neural Implants and Prostheses Laboratory headed by Dr. Cristin Welle. Devised, planned, and carried out a research project determining the neural-implant performance decay using a mouse model.
- 2013-2014.* Columbia University. Developed and prototyped an implant for autonomously detecting periprosthetic joint infections after total knee replacement surgery.
- 2021-Present.* Brown University. Developing a spinal-cortical prosthesis system to restore top-down control of locomotion after spinal cord injury. Investigating gait representation and encoding in motor cortex in the Brown Neuroengineering and Neuromotion Laboratory headed by Professor David Borton.

2021-Present. Northwestern University. Studying the cortical control of naturalistic movements in the laboratory headed by Professor Andrew Miri.

AWARDS AND SCHOLARSHIPS

2010. Community Builders & Remodelers Association of New Jersey scholarship.
- 2010-2014. Dean's List at Columbia University
2012. Columbia WEP Grant to fund internship at Laboratory for Intelligent Imaging and Neural Computing. Received April, 2012. Beth Vanderputten (bv2145@columbia.edu, 212-854-9388).
2013. ORISE Fellowship to fund research at the FDA. Received June, 2013. Melissa Goodman (Melissa.Goodman@orau.org, 865-241-1294).
2014. ASAIO Student Design Competition, Finalist.
2014. Collegiate Inventor's Competition, 3rd place, \$7500.
2014. Brown Institute for Brain Science NeuroPracticum award. Received September, 2014. Christopher Moore (christopher_moore@brown.edu, 401-863-1054).
2017. Brain Science Graduate Research Award Fellowship. Received July, 2017. Ines Tomas Pereira (ines_tomas_pereira@brown.edu, 401-863-5926).
2020. Society for the Neural Control of Movement Travel Scholarship. Received January 2020. Michelle Smith (michelle@podiumconferences.com).

PRESENTATIONS / POSTERS

Xing D, Civillico E, Huang S, Krauthamer V, Welle C. *Characterization of in Vivo Mice Electrode Implant Performance as Correlates of Frontal Limb Behavior*. Poster session presented at: 2nd annual Columbia undergraduate Research Symposium; 2013 Oct 3; New York, NY.

Huang S, Civillico E, **Xing D**, Park S, Knaack G, Krauthamer V, Welle C. *A Video-Based Behavioral Test Platform to Evaluate the Long-term Safety and Effectiveness of Neural Interface Technology*. Poster session presented at: IEEE EMBS Conference on Neural Engineering; 2013 Nov 6-8; San Diego, California.

Xing D, Aghagolzadeh M, Brandman D, Vargas-Irwin C, Truccolo W, Borton D. *Low Dimensional Dynamics of the Primary Motor Cortex during Natural Locomotion Captures Kinematic Information and Improves Decoding Performance for Brain Machine Interfaces*. Poster session presented at: 2015 Neuroscience. 45th Annual Meeting of the Society for Neuroscience; 2015 Oct 17-21; Chicago, IL.

Xing D. *Investigating the role of primary motor cortex in directed and un-directed locomotion in a rhesus macaque model.* Invited speaker at SNEAALAS Spring 2019 General Membership Meeting; 2019 March 27; Providence, RI.

Xing D, Truccolo W, Borton D. *Population dynamics in primary motor cortex during locomotion and obstacle avoidance.* Poster session presented at: 29th Annual Neural Control of Movement Meeting; 2019 April 24-27; Toyama, Japan.

Xing D. *Primary motor cortex differentially modulates movement during locomotion and voluntary actions.* Invited speaker at Neural Control of Movement Award Winners Symposium; 2020 June 17; Online.

PUBLICATIONS

Capogrosso M, Milekovic T, Borton DA, Wagner F, Moraud EM, Mignardot J, Buse N, Gandar J, Barraud Q, **Xing D,** Jianzhong Y, Ko D, Qin L, Detemple P, Denison T, Micera S, Bezarid E, Bloch J, Courtine G. A brain spinal interface alleviating locomotor deficits after spinal cord injury. *Nature* 539(7628):284-288, 2016.

Xing D, Aghagolzadeh M, Truccolo W, Borton D. Low-dimensional motor cortex dynamics preserve kinematics information during unconstrained locomotion in nonhuman primates. *Front Neurosci.* 13:1046, 2019.

Xing D, Truccolo W, Borton D. Emergence of distinct neural subspaces in motor cortical dynamics during volitional adjustments of ongoing locomotion. *In review.*

SKILLS

Programming – proficient: Matlab, C#, some experience: C++, Python

Design software – Autocad, Fusion 360, Eagle, Adobe Illustrator

Animal models – Rhesus macaques (behavioral training, husbandry, surgery, electrophysiology)