

## **Brandon Forys**

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### Education

**BA Honours in Psychology**, the University of British Columbia, Vancouver, BC, expected May 2020

Senior-level average: 88% | Psychology average: 88% | Cumulative average: 88%

**High School Diploma**, Tempo School, Edmonton, AB, June 2016

### Honours and Awards

**Canada Graduate Scholarship – Master’s**, NSERC, 2020 (\$17,500)

**NSERC Undergraduate Student Research Award**, UBC, 2020 (\$4,500)

**Trek Excellence Scholarship for Continuing Students**, UBC, 2019 (\$1,500)

**ARTA Scholarship**, Alberta Retired Teachers’ Association, 2019 (\$3,000)

**Wesbrook Scholar**, UBC, 2019 (\$1,000)

**HSBC Emerging Leader Scholarship**, UBC, 2019 (\$5,000)

**Suedfeld Scholar Award**, UBC Psi Chi, 2019 (\$500)

**PSYC 217 Poster Award, 1<sup>st</sup> Place**, UBC Psychology, 2018

**Student Scholarship in Arts**, UBC Faculty of Arts, 2018 (\$1,000)

**Trek Excellence Scholarship for Continuing Students**, UBC, 2017 (\$1,500)

**Stephen Straker Arts One Prize**, UBC Arts One Program, 2017 (\$1,000)

**University of BC Sopron Memorial Scholarship**, UBC, 2016 (\$5,000)

**Dean’s List**, UBC Faculty of Arts, 2016-17, 2017-18, 2018-19

### University activities (Research)

#### Publications

**Paper. Forys, B. J.**, Xiao, D., Gupta, P., & Murphy, T. H. (2020). Near real-time selective markerless tracking of mouse body parts using deep neural networks. *eNeuro*.

**Paper. Forys, B.**, Xiao, D., Gupta, P., Boyd, J. D., & Murphy, T. H. (2018). Real-time markerless video tracking of bodyparts in mice using deep neural networks. *BioRxiv*, 482349. <https://doi.org/10.1101/482349>

**Paper. Xiao, D., Forys, B. J.**, Vanni, M. P., & Murphy, T. H. (in preparation). MesoNet: machine learning-based approaches for automated analysis of mouse mesoscale cortical regions during reaching for water task.

**Paper. Hamden, J. E.**, Gray, K., Saledzadeh, M., Kachkovski, G. K., **Forys, B. J.**, Ma, C., Austin, S., Soma, K. K. (in preparation). Local glucocorticoid regulation in the brain is region and age dependent.

#### Poster Presentations

**Poster Presentation. Forys, B. J.**, Xiao, D., Gupta, P., Boyd, J. D., & Murphy, T. H. (2019). Short latency (~100 ms) markerless video tracking of body parts in mice using deep neural networks. Presented at Neuroscience 2019, Chicago, IL., and UBC Neuroscience Undergraduate Research Conference, 2020.

**Poster Presentation. Xiao, D., Forys, B. J.**, Tandun, R., & Murphy, T. H. (2019). Automated alignment and segmentation of mouse mesoscale brain images using machine learning. Presented at Neuroscience 2019, Chicago, IL.; UBC Future of Health Research Day; and UBC School of Biomedical Engineering Symposium, 2019.

**Poster Presentation. Forys, B.**, Tobiansky, D. J., & Soma, K. K. (2019). A novel steroidogenic model for reward-seeking behaviour. Presented at UBC Psychology Undergraduate Research Conference, 2019.

**Poster Presentation. Forys, B.**, Xiao, D., Gupta, P., Boyd, J. D., & Murphy, T. H. (2018). Real-time markerless video tracking of bodyparts in mice using deep neural networks. Presented at UBC Brain Circuits Cluster 2018; Neuroextravaganza 2018; UBC Undergraduate Neuroscience Conference 2019; and UBC School of Biomedical Engineering Symposium 2019.

**Poster Presentation. Tobiansky, D. J.**, Kachkovski, G., Enos, R. T., Schmidt, K. L., Ma, C., **Forys, B.**, Hamden, J. E., Jalabert, C., Floresco, S. B., Murphy, E. A., Soma, K. K. (2018). Perinatal sucrose exposure in rats disrupts hormones, brain, and behavior in adulthood. Presented at Neuroscience 2018, San Diego, CA. (Credited on poster, not on abstract)

**Poster Presentation. Forys, B.**, Phi, J., Shi, L., Yu, V. ZH. (2018). Emojinal perception: Emoji presence and perceived emotional valence. Presented at UBC Psychology Undergraduate Research Conference, 2018 (PSYC 217 Poster Award, 1<sup>st</sup> place winner).

**Poster Presentation.** Forys, B., Tandun, R., Cookson, J., & Xiao, D. (2018). Predicting facial and paw movement from cortical mesoscopic calcium activity in mice: A machine learning perspective. Presented at UBC Multidisciplinary Undergraduate Research Conference, 2018.

#### Teaching Positions

**Teaching Fellow** with Prof. Catherine Rawn, PSYC 218, Analysis of Behavioural Data, UBC Psychology, 2020.

**Teaching Assistant** with Prof. David King, PSYC 305A, Personality Psychology, UBC Psychology, 2019.

#### Research Positions

**Research Assistant** with Prof. Rebecca Todd, UBC Psychology, 2019-present.

Investigating aversive responses and learning using stimulus associations. Learned PsychoPy, Psychtoolbox, LabChart, and PowerLab. Supervising Honours thesis: *Modulating Effort Cost in Human Avoidance Behaviours*.

**Research Assistant** with Prof. Kiran Soma, UBC Psychology, 2018-present.

Researching methods for predicting local neurosteroid concentration from circulating steroid hormone concentrations. Learned bioinformatics, histological analysis, cluster computing, and R for statistics.

Supervised Honours thesis: *A Novel Steroidogenic Model for Reward-Seeking Behaviour*. Supervising directed studies paper: *Modelling Corticosterone Synthesis and Regeneration in the Mouse Brain*.

**Laboratory Assistant** with Prof. Tim Murphy, UBC Psychiatry, 2017-present.

Investigating movement and behavioural dynamics of mice using movement tracking; exploring the relationship between body part movement and mesoscale brain activity in mice. Learned Python, MATLAB, brain slicing, and microscopy.

**Workshop Host.** Databinge; DeepLabCut. UBC Neuroscience, 2018.

Taught members of UBC's neuroscience community how to use a novel movement tracking system.

#### University Activities (Leadership & Extracurricular)

**Vice President Internal**, UBC Chapter of Psi Chi, 2019-20.

**Tutor**, UBC Psychology, 2019. Tutored in the statistics course required for all Psychology majors at UBC.

**Vice President, Academic-Internal**, Model United Nations Student Association, 2018-20. Hires staff for, prepares materials for, and oversees execution of Model UN conferences at UBC.

**Co-Founder and Vice President**, AMS Turing Club @ UBC, 2017-present. Leads workshops on a variety of artificial intelligence topics for UBC students of all backgrounds; markets the club.

**Volunteer Web Developer**, Ubyyssey Publications Society, 2017-18. Implemented a number of front-end and back-end improvements and fixes on the Ubyyssey website; developed a software package to make it easier for Ubyyssey web developers to start working with the website on their own computers.

#### Community and Volunteer Activities

**Software Engineering Team Member**, rLoop Incorporated, 2017-present.

Works with a global team of engineers and designers to design a one-person flying machine for the Boeing-sponsored HeroX GoFly competition. Researches human factors considerations for cockpit design. Helped design an AI-based communication system for a hyperloop vehicle in the SpaceX Hyperloop Competition.

#### Skills

**Programming Languages:** Python, bash, R, MATLAB, JavaScript, C, C++, HTML/CSS, Java

**Machine Learning and Computer Vision:** TensorFlow, Keras, CUDA, OpenCV

**Web Frameworks:** Django, Flask, npm, Bootstrap, Wordpress, Squarespace

**Infrastructure:** Docker, VirtualBox, QEMU

**Visualization:** Photoshop, Illustrator, Inkscape, Inventor, Unity, Blender, AutoCAD, 3DSMax, Revit

**Experimentation Technology:** PsychoPy, PsychToolbox, BioSemi EEG, EEGLAB, LabChart/PowerLab

#### Professional affiliations

**Member**, Society for Neuroscience, 2019-present.

**Member**, Psi Chi International Honor Society in Psychology, 2019-present.

**Student member**, Association for Psychological Science, 2018-present.

#### Languages

**English** – native; **French** – fluent