

# VALERIA KEBETS

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valkebets.github.io

valkebets

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## ABOUT

After 10 years in academia working on developing tools and applying sophisticated analytical approaches to identify biological markers that contribute to disease, I am now looking to apply my expertise toward translating research into solutions that lead to optimal life outcomes, in particular in the personalized medicine domain.

## EXPERIENCE

### Postdoctoral Research Fellow

#### McGill University

2021 – Present Montreal, Canada

- Advisor: Prof. Boris C. Bernhardt
- Led several research programs that required management of large datasets ( $N > 10,000$ ), processing of neuroimaging data, statistical data analysis, data visualization, generating research reports, and dissemination to scientific and lay audiences
- Wrote reproducible Python, R, and MATLAB code on McGill University's high-computing systems
- Collaborated with engineers, clinicians and neuroscientists
- Mentored 3 undergraduate and graduate students

### Postdoctoral Research Fellow

#### National University of Singapore

2017 – 2020 Singapore

- Advisor: Prof. B.T. Thomas Yeo
- Led research projects to identify shared biological markers across psychiatric disorders using machine learning
- Co-developed an open source toolbox for unsupervised learning
- Co-organized a neuroscience conference and a hackathon
- Taught a course on unsupervised machine learning at the Organization for Human Brain Mapping Annual Meeting
- Assisted with development/maintenance of IRB documents

### PhD Candidate

#### University of Geneva

2012 – 2016 Geneva, Switzerland

- Led several research projects to predict early diagnosis of Alzheimer's disease using machine learning and neuroimaging data
- Collected clinical and MRI data in  $>100$  elderly individuals at risk for Alzheimer's disease
- Facilitated collaborations between engineers, neurologists, neuropsychologists and cognitive neuroscientists

## CERTIFICATIONS

Deep Learning Specialization (Coursera)

## EDUCATION

### Ph.D. in Neuroscience

#### University of Geneva

2012 – 2016 Geneva, Switzerland

- Advisors: Prof. Dimitri Van De Ville and Prof. Frédéric Assal
- Thesis: Functional imaging markers of the MCI brain in task and at rest: detecting memory and connectivity impairments in prodromal Alzheimer's disease
- Keywords: neuroimaging, machine learning, prediction, biomarker development

### M.Sc. in Clinical Neuroscience

#### University College London

2009 – 2010 London, United Kingdom

- Advisor: Prof. David J. Werring
- Thesis: Neuroimaging correlates of vascular cognitive impairment: prevalence and functional significance of mesial temporal lobe atrophy
- Keywords: neuroimaging, stroke, cognition, radiological marker

### B.Sc. in Psychology

#### University of Geneva

2006 – 2009 Geneva, Switzerland

## SKILLS

Python Scikit-learn TensorFlow PyTorch  
R Bash MATLAB GitHub Unix/Linux

machine learning deep learning big data  
data processing data mining data visualization  
scientific software development multi-modal MRI  
patient recruitment patient engagement  
scientific writing literature review ethics

## LANGUAGES

French ● ● ● ● ●

English ● ● ● ● ●

Russian ● ● ● ● ●

## SELECTED HONORS AND AWARDS

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-  Jeanne Timmins Costello Fellowship from the Montreal Neurological Institute (**40'000 CAD**) for the project “*A multimodal and dimensional approach to study typical and atypical neurodevelopment*” (2022-2023)
-  Travel awards (total ~6,000 CAD) from the Quebec Bio-Imaging Network, Swiss National Science Foundation, Jean-Falk Vairant Foundation, and Lemanic Neuroscience Doctoral School to attend international conferences (2012-2022)
-  Finalist for Somerfeld-Ziskind Research Award, recognizing outstanding research investigations in biological psychiatry (2021)
-  Quebec Autism Research Training Fellowship from the Transforming Autism Care Consortium (**40'000 CAD**) for the project “*Neurodevelopmental subtypes informed by hierarchical brain network features*” (2021)
-  Project grant from the Boninchi Foundation (**75'000 CHF**) for the project “*A multimodal marker to predict the progression to Alzheimer's disease*” (2016)
-  Scholarship (**10'000 CHF**) from the Association Suisse des Femmes Diplômées des Universités (2015)
-  Travel Mobility Grant (**11'600 CHF**) from the Swiss National Science Foundation to visit the Functional Imaging in Neuropsychiatric Disorders Lab, Stanford University, Stanford, CA, USA (2013-2014, 6 months)

## SELECTED INVITED TALKS

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1. Unsupervised machine learning approaches in psychiatric neuroimaging, Organization for Human Brain Mapping Annual Meeting (Singapore 2018, Virtual 2020)
2. Identifying transdiagnostic patterns of neural dysfunction, Feindel Brain Imaging Lecture Series, Montreal, Canada (2019)
3. Somatosensory-motor dysconnectivity spans multiple transdiagnostic dimensions of psychopathology, Organization for Human Brain Mapping Annual Meeting, Rome, Italy (2019)
4. Connectivity-mediated dimensions of psychopathology across mental health and disease, Summer Whistler Scientific Workshop on Brain Functional Organization, Connectivity and Behavior, Noosa, Australia (2019)
5. Multivariate and predictive modelling of neural variability in mild cognitive impairment, International Workshop on Pattern Recognition in Neuroimaging, Singapore (2018)
6. Predicting pure amnesic mild cognitive impairment conversion to Alzheimer's disease using joint modeling of imaging and clinical data, International Workshop on Pattern Recognition in Neuroimaging, Stanford, CA, USA (2015)
7. Structural and functional alterations in presymptomatic Alzheimer's disease revealed by multivariate pattern analysis, Annual Meeting of the Society for Neuroscience, San Diego, CA, USA (2013)

## SELECTED PUBLICATIONS

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1. Park B, **Kebets V**, et al. Multiscale neural gradients reflect transdiagnostic effects of major psychiatric conditions on cortical morphology. *Communications Biology* (2022), 5(1), 1-14.
2. Chen J\*, Tam A\*, **Kebets V**, et al. Shared and unique brain network features predict cognitive, personality, and mental health scores in the ABCD study. *Nature Communications* (2022), 13, 2217.
3. Benkarim O, Paquola C, Park B, **Kebets V**, et al. Population heterogeneity in clinical cohorts affects the predictive accuracy of brain imaging. *PLOS Biology* (2022), 20(4), e3001627.
4. **Kebets V**, et al. Fronto-limbic neural variability as a transdiagnostic correlate of emotion dysregulation. *Translational Psychiatry* (2021), 11, 545.
5. **Kebets V**, et al. Somatosensory-motor dysconnectivity spans multiple transdiagnostic dimensions of psychopathology. *Biological Psychiatry* (2019), 86, 779-91.
6. **Kebets V**, et al. Multivariate and predictive modelling of neural variability in mild cognitive impairment. *8th International Workshop on Pattern Recognition in Neuroimaging* (2018).
7. **Kebets V**\*, Wegrzyk J\*, et al. Identifying motor functional neurological disorder using resting-state functional connectivity. *Neuroimage: Clinical* (2018), 17, 163-8.
8. **Kebets V**, et al. Predicting pure amnesic mild cognitive impairment conversion to Alzheimer's disease using joint modeling of imaging and clinical data. *5th International Workshop on Pattern Recognition in Neuroimaging* (2015).
9. **Kebets V**\*, Gregoire SM\*, Charidimou A\*, et al. Prevalence and cognitive impact of medial temporal atrophy in a hospital stroke service: retrospective cohort study. *International Journal of Stroke* (2015), 10(6), 861-7.

\* Authors contributed equally