GABRIEL LOEWINGER

Boston, MA | (202) 215 – 4719 | gloewinger@g.harvard.edu
gabeloewinger.com | github.com/gloewing | linkedin.com/in/gabrielloewinger

EDUCATION

Harvard University   Boston, MA
Ph.D., Biostatistics   Expected: May 2022
National Institutes of Health PhD Fellowship Recipient (NRSA: F31)

Pitzer College   Claremont, CA
B.A., Neuroscience with Honors   May 2012

RESEARCH INTERESTS

- Statistics, Machine Learning, Applied Optimization, Neuroscience, Chemical Dependence, Drug Policy

HONORS, FELLOWSHIPS AND GRANTS

- Harvard Medical School Computational Neuroscience Symposium Best Abstract Award   Oct 2020
- National Institutes of Health (NIDA) PhD Fellowship: National Research Service Award (F31)   Aug 2020
- Rose Fellowship, Harvard School of Public Health   Nov 2019
- National Institutes of Health Postbaccalaureate Intramural Research Training Award   Feb 2015
- Fulbright Research Fellowship   May 2013
- Thomas J. Watson Fellowship   May 2012
- Amgen Scholarship (UCLA)   Mar 2011
- Claremont Colleges Summer Neuroscience Research Fellowship   Mar 2011

PUBLICATIONS AND MANUSCRIPTS

Loewinger G, Acosta R, Mazumder R, Parmigiani, G. Optimal Ensemble Construction for Multi-Study Prediction with Applications to COVID-19 Excess Mortality Estimation. *arXiv:2109.09164. Under Review*.

Loewinger G, Patil P, Kishida K, Parmigiani G. Hierarchical Resampling for Bagging in Multi-Study Prediction with Applications to Human Neurochemical Sensing. *Annals of Applied Statistics (To Appear)*.

Márquez I, **Loewinger G**, Vargas J, López J, Díaz E, Esber G. Surprise-Induced Enhancements in the Associability of Pavlovian Cues Facilitate Learning across Behavior Systems. *Behav. Neuroscience (To Appear)*.

Rush B, Marcus O, García S, Loizaga-Velder A, **Loewinger G**, Spitalier A, Mendive F (2021). Protocol for Outcome Evaluation of Ayahuasca-Assisted Addiction Treatment: The Case of Takiwasi Center. *Frontiers in Pharmacology, 12*.

Augustin S, **Loewinger G**, O'Neal T, Kravitz A, Lovinger D (2020). Dopamine D2 Receptor Signaling on iMSNs is Required for Initiation and Vigor of Learned Actions. *Neuropsychopharmacology*. 45, 2087–2097.

Johnson K, Voyvodic L, **Loewinger G**, Mateo Y, Lovinger D (2020). Operant Self-Stimulation of Thalamic Terminals in the Dorsomedial Striatum is Constrained by Metabotropic Glutamate Receptor 2. *Neuropsychopharmacology*. 45, 1454–1462.

Loewinger G, Sharma B, Karki D, Khatiwoda P, Kainee S, Poudel K (2016). Low Knowledge and Perceived Hepatitis C Risk Despite High Risk Behaviour among Injection Drug Users in Kathmandu, Nepal. *The International Journal of Drug Policy*. 33:75-82.

Loewinger G*, Oleson E*, Cheer J (2013). Using Dopamine Research to Generate Rational Cannabinoid Drug Policy. *Drug Testing and Analysis*. 5(1):22-26.

Wassum K, Ostlund S, **Loewinger G**, Maidment N (2013). Phasic Mesolimbic Dopamine Release Tracks Reward Seeking During Expression of Pavlovian-to-Instrumental Transfer. *Biological Psychiatry*. 73(8):747-755.

Loewinger G, Beckert M, Tejeda H, Cheer J (2011). Methamphetamine-Induced Dopamine Terminal Deficits in the Nucleus Accumbens are Exacerbated by Reward-Associated Cues and Attenuated by CB1 Receptor Antagonism. *Neuropharmacology.* 62(7):2192-2201.

OPEN-SOURCE SOFTWARE

studyStrap | CRAN Package
- Developed the *studyStrap* CRAN package, which implements numerous machine learning methods for training prediction algorithms with multiple training datasets
- Package has over 7,500 downloads and was named one of R View's "Top 40" New R Packages, February 2020

SELECTED RESEARCH EXPERIENCE

Harvard School of Public Health   Boston, MA
Graduate Researcher   Aug 2017-Present
- Advisor: Professor Giovanni Parmigiani, Dissertation Committee: Professor Rahul Mazumder (MIT) and Professor Rajarshi Mukherjee (Harvard)
- Developed statistical learning methods for integration of multiple datasets to improve prediction performance and model interpretability
- Spearheaded collaborations, served as sole statistician on 1 observational study and 3 lab neuroscience projects

National Institutes of Health (NIAAA) | Laboratory of Dr. David Lovinger   Bethesda, MD
Postbaccalaureate IRTA Research Fellow   Feb 2015-July 2017
- Proposed, designed and conducted an experiment to study dopamine activity in decision-making
- Wrote extensive Python code to analyze neurochemical and behavioral data
- Conducted applied statistical analyses (e.g., principal component analysis and linear mixed effects models)
- Designed and programmed (Med-PC) behavioral experiments for postdoctoral fellows

Fulbright Fellowship   Kathmandu, Nepal
Research Fellow   Aug 2013-Nov 2014
- Designed research methodology and questionnaire for study of hepatitis C risk among drug users
- Secured funding from the United Nations Office on Drugs and Crime
- Hired, trained and led 3 researchers, using Nepali language skills, to conduct ~700 participant interviews
- Conducted extensive statistical analysis of survey response data (e.g., generalized linear models)
- Wrote and submitted final research report to the United Nations Office on Drugs and Crime

Thomas J. Watson Fellowship   Peru, Brazil, Thailand, Vietnam
Research Fellow   Aug 2012-July 2013
- Conducted qualitative research on alternative treatments for chemical dependence
- Established research contacts in international settings and conducted participant interviews in 3 languages

Colleges Behavioral Health Research   Claremont, CA
Researcher   Sep 2010-May 2012
- Proposed, designed and led a study on alcohol policy and student drinking behavior
- Secured funding from Dean of Students offices at Pitzer and Harvey Mudd Colleges
- Collected ~500 surveys and conducted extensive applied statistical analysis of results
- Research resulted in policy changes at Pitzer college through addition of a Good Samaritan clause

UCLA, Semel Institute | Laboratory of Dr. Nigel Maidment   Los Angeles, CA
Summer Amgen Research Fellow   May 2011-Aug 2011
- Ran behavioral and in vivo fast-scan cyclic voltammetry experiments
- Conducted extensive neurochemical and behavioral data analysis

University of Maryland, School of Medicine | Laboratory of Dr. Joe Cheer   Baltimore, MD
Researcher   Aug 2009-Jan 2010
- Proposed, designed and conducted a study assessing methamphetamine neurotoxicity in rats
- Conducted extensive applied statistical analysis of neurochemical and behavioral data

TEACHING

Harvard School of Public Health   Boston, MA
Graduate Teaching Assistant   May 2018-Present

- **Introductory Statistics for Medical Research**
  - One of 7 teaching assistants for a master's level biostatistics course of ~160 students. Taught sessions on R programming and graded exams

- **Statistics for Medical Research II**
  - One of 5 teaching assistants for a master's level biostatistics course of ~110 students. Taught sessions on R programming and graded homework

- **Practice and Culminating Experience for Quantitative Methods**
  - The only teaching assistant for a master's level biostatistics course of ~35 students. Advised students on statistical components of their capstone research project

- **Consulting Seminar**
  - The only teaching assistant for doctoral consulting seminar of ~5 students. Graded homework

- **Applied Regression Analysis**
  - One of 3 teaching assistants for a master's level biostatistics course of ~60 students. Taught weekly section of ~20 students, held weekly office hours and graded homework and exams

RESEARCH TALKS

Applied Statistics Talk: *Extracting Latent Neural Time Series Signals: Phasic and Tonic Components of Fiber Photometry Data*
Graduate Student Seminar Series, Harvard Biostatistics   Apr 2021

Doctoral Thesis Research: *Machine Learning Methods for In Vivo Neurochemical Estimation*
Read Montague Lab, Virginia Tech | *Invited Talk*   May 2019
Summer Student Research Symposium, Harvard Biostatistics   Aug 2018

NIH IRTA Fellowship Research: *Accumbal dopamine transients are valence-dependent*
David Lovinger Lab Meeting Presentation   May 2016, 2017

Fulbright Pre-Departure Orientation: *Conducting Research in South Asia*
Fulbight Conference, Washington, DC | *Invited Talk*   Jun 2015

Fulbright Research: *The Association Between Drug Rehabilitation Attendance and Hepatitis C Risk Behavior*
Martin Chautari, Social Science Center, Kathmandu, Nepal   Sep 2014
Fulbright Commission, Kathmandu, Nepal   Aug 2014
South and Central Asia Fulbright Research Conference, Chennai, India   Feb 2014

Watson Research: *Alternative Treatments for Chemical Dependence*
Returning Fellows' Conference, Amherst, MA   Aug 2013

Undergraduate Thesis Research: *Phasic Mesolimbic Dopamine Release is Associated with Pavlovian Cue-Induced Potentiation of Instrumental Activity*
Keck Science Center, Claremont, CA   Sep 2011

POSTERS

Loewinger G, Patil P, Mazumder R, Kishida K, Parmigiani G. Multi-Study Machine Learning Methods for In Vivo Estimation of Dopamine in Humans (2020). *Brigham Health/Harvard Medical School Computational Data Neuroscience Symposium*.

Loewinger G, Esber G, Caprioli D, Mateo Y, Lovinger D (2016). Dopamine at indifference: Accumbal dopamine transients are valence-dependent. *Society for Neuroscience Meeting*.

Loewinger G, Wassum K, Ostlund S, Maidment N (2011). Mesolimbic Dopamine Release is Associated With Pavlovian Cue-Induced Stimulation of Instrumental Activity. *Keck Science Center Thesis Poster Session*.

Loewinger G, Wassum K, Ostlund S, Maidment N (2011). Mesolimbic Dopamine Release is Associated With Pavlovian Cue-Induced Stimulation of Instrumental Activity. *Amgen Scholars Poster Session*.

Wassum K, Ostlund S, **Loewinger G**, Maidment N (2011). Phasic dopamine signaling during Pavlovian to instrumental transfer. *Society for Neuroscience Meeting*.

Beckert M, **Loewinger G**, Tejeda H, Bernstein D, Cheer J (2010). Endocannabinoid modulation of methamphetamine neurotoxicity. *Society for Neuroscience Meeting*.

LEADERSHIP AND ACADEMIC SERVICE

Harvard Biostatistics Entering Student Mentor   May 2021-Present
- Mentored entering doctoral student

Harvard Biostatistics Multi-Study Learning Journal Club   Jan 2021-Present
- Established weekly journal club focused on transfer learning, domain generalization and domain adaptation

Harvard Biostatistics HIV Working Group Co-Organizer   Sep 2019-May 2020
- Organized weekly working group seminar series: selected and invited speakers

Pitzer College Neuroscience Club Cofounder   Sep 2011-May 2012
- Secured club funding advised new students on the neuroscience major

SKILLS

- **Relevant Software and Computing:** *R*, *Python*, *Julia*, *LaTex*, High Performance Computing Cluster (*Bash*)
- **Applied Statistics:** Cross-Sectional, Multivariate/Longitudinal, Time Series, Survival, Data Visualization
- **Optimization:** Linear, Non-Linear, and Mixed-Inter Optimization with *Julia JuMP*, *Gurobi*, *MOSEK, CVXR*
- **Languages:** Nepali (advanced), Spanish (intermediate), Portuguese (intermediate)
- **Interests:** Brazilian Jiu Jitsu, Chess, Vipassana Meditation

RELEVANT COURSEWORK

Harvard University and MIT
- Statistical Methods I-II, Statistical Inference, Probability, Advanced Regression and Statistical Learning, Applied Machine Learning, Analysis of Multivariate and Longitudinal Data, Bayesian Methodology, Dimension Reduction, Introduction to Epidemiology, Social and Biological Networks, Machine Learning through a Modern Optimization Lens, Advanced Optimization, Nonlinear Optimization

PROFESSIONAL REFERENCES

Giovanni Parmigiani, Professor
Department of Biostatistics, Harvard School of Public Health
gp@jimmy.harvard.edu

Prasad Patil, Assistant Professor
Department of Biostatistics, Boston University
patil@bu.edu

Rahul Mazumder, Associate Professor
Operations Research and Statistics, Massachusetts Institute of Technology
rahulmaz@mit.edu

Kenneth Kishida, Associate Professor
Department of Physiology and Pharmacology, Wake Forest School of Medicine
kkishida@wakehealth.edu