NICHOLAS A. DEL GROSSO

PERSONAL INFO

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GOALS

- Support open science by building tools and teaching research methodology that promotes reproducible research.
- Build technical skills in a wide variety of fields in order to perform high-quality research at institutes with limited resources.
- Obtain teaching, project management, and laboratory experience sufficient to one day become an excellent university professor.

EDUCATION

Oct 2014 - Dec 2018 — *PhD. Candidate* — Graduate School of Systemic Neurosciences, Luedwig-Maximillians Universitaet

Aug 2012 — *M.Sc. Neuroscience* — Graduate Training Centre of Neuroscience, Eberhard Karls Universitaet Tuebingen

May 2010 — *B.Sc. Psychology* — Wittenberg University

RESEARCH EXPERIENCE

Nov 2018 - July 2019 — *Max Planck Institute of Biochemistry* — Prof. Dr. Matthias Mann

Programmed high-throughput automated data collection and data analysis pipelines. I also designed and implemented a job-scheduling web application, implementing lean management methods to decrease data collection waiting times for 40 users and trained and mentored several biology and bioinformatics researchers in Python programming methods and open-source collaboration workflows, as well as gave introductory programming workshops for over 150 researchers.

May 2013 - Nov 2018 — *Ludwig-Maximillians Universitaet* — Prof. Dr. Anton Sirota

Programmed a 3D graphics engine in Python to build virtual reality system for freely moving rats, supervised students in programming, engineering, and cognitive science projects, organized weekly journal clubs, and ordered new equipment, trained rodents to perform behavioral tasks, and performed surgery on said rodents as part of brain research.

Aug 2012 - May 2013 — *Universitaet Tuebingen* — Prof. Dr. Christoph Braun

Wrote a research grant to study the top-down and bottom-up interactions by computational modeling information propagation in early sensory pathways as measured by MEG, designed and administrated an institute wiki, organized a student lecture series, and supervised two studentsâ€™ EEG research projects.

Nov 2011 - July 2012 — *Universitaet Tuebingen* — Prof. Dr. Niels Birbaumer

Programmed in Matlab a time-frequency and evoked potential analysis on three yearsâ€™ worth of MEG data assessing longitudinal changes in stroke patients receiving physiotherapy.

Oct 2012 - Nov 2012

Universitaet Tuebingen — Prof. Dr. Cornelius Schwarz

Trained rats to perform whisking in response to barrel cortex stimulation viachronically-implanted electrodes, mapping stimulation sensitivity to each cortical layer.

INDUSTRY EXPERIENCE

Freelance Scientific Consultant — UKT Psychosomatic Med. and Sports Med.

I evaluated and designed a solution for performing medical science studies in a placebo study, and taught the PhD student who carried out the study over several remote sessions and a few travel consultations.

Research Internship — The Neuromarketing Labs

I completed set-up of an EEG laboratory, including software calibration and noise measurements. Designed and ran two experiments estimating the evoked responses of semantic agreement and price agreement, then analyzed the data. The results from the second experiment are the basis of Dr. Muellerâ€™s recently-published book, "Neuropricing". Currently volunteering as an EEG consultant by giving one-day workshops on Fieldtrip, SPM, and artifact correction methods.

TEACHING EXPERIENCE

April 2019 — *Trainer* — The Python Tsunami

In this compressed version of the "Intro. to Python" course, I led 100 biology students and 6 instructors in a conference-style 2-day course that culminated in a data jam showcasing their new programming and data analysis skills.

March 2019 — *Trainer* — Computer Graphics for Virtual Reality

Taught Object-Oriented Programming methdology in the context of designing a 3D Graphics library, including 3D matrix multiplication, shader graphics, and event loop programming.

August 2018 — *Trainer* — Int. Scientific Programming in Python

A 4-day workshop on good programming practices essential for writing robust, reusable Python code for scientific data analysis. Covered object-oriented programming, advanced iteration and automation structures in Python, performance profiling, testing, and packaging code. Throughout each unit, I emphasized idiomatic code style, good coding practices, and problem-solving strategies.

July 2018 — *Programming Instructor* — Teaching Statistics with R

This 4-day workshop is an intensive R course taught to the Psychology department professors at Kwantlen University in Vancouver, Canada. In this course, they learned the R programming language and how to build statistics teaching materials with it.

April 2018 - Present — *Organizer* — Munich Science Slam

Co-founded a tri-monthly science slam event series, working with 10-14 speakers from various institutes to give talks in a competion format. At the end of each event, I demonstrate a real-time evaluation system into the event for the 60 audience members to use for feedback.

JOURNAL PUBLICATIONS

Nicholas A. Del Grosso, Anton Sirota. “Ratcave, A 3D graphics python package for cognitive psychology experiments” May 2019. Behavioral Research Methods. https://doi.org/10.3758/s13428-019-01245-x

Nicholas A. Del Grosso, Justin J. Graboski, Weiwei Chen, Eduardo Blanco HernÃ¡ndez, Anton Sirota. “Virtual Reality system for freely-moving rodents.” bioRxiv 161232. July 2017; doi=https://doi.org/10.1101/161232

Broetz D., Del Grosso, N.A., Rea M., Ramos-Murguialday, A., Soekadar S.R., Birbaumer, N. “A New Hand Assessment Instrument for Severely Affected Stroke Patients.” Journal of Neurorehabilitation. 2014; 34(3), 409-27.

Benoit, J.B., Del Grosso, N.A., Yoder, J.A., Denlinger, D.L. “Resistance to Dehydration between Bouts of Blood Feeding in the Bed Bug, Cimex Lectularius, is Enhanced by Water Conservation, Aggregation, and Quiescence.” American Journal of Tropical Medical Hygience. May 2007; 76(5), 987-93.

SKILLS

- **Languages**: English (Mother Tongue), German (Level B1), French (Level A1-2)
- **Programming**: Python, R, Matlab, GLSL, Docker, LabView, C, Bash/Linux, LaTeX, Arduino
- **Stimulus Presentation**: Psychopy, Neurobs Presentation, Psychophysics Toolbox, OpenGL, Pyglet, Vispy, SuperLab, RatCAVE
- **Statistical Analysis**: Python SciPy Stack (Pandas, Numpy, Matplotlib, etc), Statistical Parametric Mapping (SPM), SPSS, R, Matlab Statistics Toolbox, Fieldtrip, gTec Analyze, BrainVision Analyzer
- **Data Workflow Management**: Snakemake, PyDoit, Docker, Singularity
- **Graphics**: Blender3D, Adobe Suite (Photoshop, Illustrator, and InDesign), OpenGL, Google SketchUp, Open Source Suite (GIMP, Inkspace, and Scribus)
- **Wet Lab Skills**: Rat Neurosurgery, Animal Behavioral training (rats and monkeys), in vivo electrophysiology (single needle electrodes, chronically-implanted electrode arrays, noninvasive arrays of EEG electrodes and MEG sensors), Basic Electronics, Comfortable with building custom laboratory equipment
- **EEG System Experience**: BrainProducts, gTec, Grass Instruments, CTF

AWARDS

October 2017 Hackathon 3rd Place Winner and "Most Creative Team" Award at Burda Bootcamp Event "Health and Fitness Hackathon"

July 2017 Hackathon Track Winner at Media Lab Bayern Event "FutureLab--Smart Home meets Journalism"

April 2017 Hackathon Winner at Burda Bootcamp Event "Love Hackathon"

2016 Best Talk Award at Interact Munich Conference

2015 Best Poster Award at Interact Munich Conference

2011 National Science Foundation Graduate Research Fellowship
2008 NSF Neuroscience REU Fellowship at Duke University

June 24, 2019