

# Thiago Tarraf Varella

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## Education

- **Cooperativa de Ensino Dr. Zerbini** Sao Jose do Rio Preto, SP, Brazil  
*High School* 2011 - 2013
  - GPA: A (between 3.5 - 4.0 out of 4.0)
  - 1<sup>st</sup> of 25 students
- **Universidade de Sao Paulo, USP** Sao Paulo, SP, Brazil  
*Molecular Sciences BSc* 2014 - 2018
  - GPA: 8.9/10

## Research Experience

The overall goal of my research experiences is to better understand mathematically biological processes to develop our knowledge about behavior. The processes being studied currently are related to Time Perception with Biological Networks and Vocal Development of Marmosets. My experiences on undergraduate research are:

1. **Physiological constraints in vocal development** (2017-): Advised by Prof. Asif Ghazanfar and Dr. Daniel Takahashi, both researchers from the Department of Psychology - Princeton University.
2. **Biological interpretation of time perception computational models** (2016-): Advised by Prof. Marcelo B. Reyes and Prof. Raphael Y. de Camargo, both researchers from Centro de Matematica, Computacao e Cognicao (CMCC) - UFABC.
3. **Social issues in contemporary education** (2014-2016): Advised by Ms. Giuliano S. Olguin, researcher from Grupo de Estudos e Pesquisas em Educacao Superior (GEPES) - UNICAMP and Dr. Antonio Carlos Seabra, researcher from Laboratorio de Sistemas Integraveis (LSI) - POLI, USP
4. **Chaotic discrete dynamical systems** (2015): Advised by Dr. Fabio A. Tal, researcher from Instituto de Matematica (IME) - USP

## Publications

1. Salcas Olguin, G., **Tarraf Varella, T.**, Seabra, A. C. (2018). *Accessibility and Social Issues in e-Learning for Engineering Students*. IAENG Transactions on Engineering Sciences: pp. 531-542
2. Salcas Olguin, G., Alves de Souza, I., **Tarraf Varella, T.**, Seabra, A. C. (2015, November). *The Impact of Different Productions Styles of Videos in Online Education*. ICERI2015 Proceedings. 8th edition.

## Preprints, Posters & Presentations

1. **Varella, T. T.**, Reyes, M. B., Caetano, M. S., De Camargo, R.Y., *A Model for the Peak-Interval Task Based on Neural Oscillation Delimited States*. Preprint in bioRxiv 448688; doi: <https://doi.org/10.1101/448688>
2. **Varella, T. T.**, Takahashi D. Y., Ghazanfar, A., *Phase transitions in vocal communication are driven by energy-information balance*. Poster and lightning session. Princeton Center for Theoretical Sciences meeting: How to get from A to B: Transitions in Biology, Princeton University, Princeton, NJ, 2017
3. **Varella, T. T.**, de Camargo, R. Y., Reyes, M. B., *Suitability of a Neuronal Dynamics Model to Neurophysiological Properties of Time Perception* (second stage). Poster and oral presentation. Molecular Sciences Program Poster Presentation, Universidade de Sao Paulo, Sao Paulo, Brazil, 2017
4. **Varella, T. T.**, de Camargo, R. Y., Reyes, M. B., *Suitability of a Neuronal Dynamics Model to Neurophysiological Properties of Time Perception* (first stage). Poster and oral presentation. Molecular Sciences Program Poster Presentation, Universidade de Sao Paulo, Sao Paulo, Brazil, 2016
5. Olguin, G. S, **Varella, T. T.**, Seabra, A. C., *Accessibility and Social Issues in e-Learning for Engineering Students*. Poster prepared for ICEIT'16, San Francisco, USA, 2016
6. Olguin, G. S, Souza, I. A., **Varella, T. T.**, Seabra, A. C., *The Impact of Different Production Styles of Videos on Online Education*. Poster prepared for ICERI 8th edition, Seville, Spain, 2015

## Fellowships & Grants

University of Sao Paulo merit-based scholarship for exchange at Princeton University . . . . . 2017  
FAPESP Undergraduate research scholarship # 2016/19691-1. . . . . 2016  
University of Sao Paulo grant for tutoring in Mathematics . . . . . 2015-2016

## Honors & Awards

Best Student Paper Award of International Conference on Education and Information Technology 2016  
Honorable Mention at National Math Olympiad . . . . . 2014-2015  
Awards in Math, Physics and Chemistry Olympiads . . . . . < 2014

## Additional Education

1. **Fundamentals of Deep Learning for Computer Vision** (2018): One-day course offered by NVIDIA Deep Learning Institute in October 2018.
2. **Introduction to the Neurosurgery League** (2016): One-week course at Faculdade de Medicina da USP (FMUSP) to undergraduates during May 2016.
3. **Oscillations and Waves** (2015): Summer school at Instituto de Matematica Pura e Aplicada (IMPA) to undergraduates.

4. **Real Analysis** (2015): Summer school at Instituto de Matematica Pura e Aplicada (IMPA) to undergraduates.
5. **Chemistry Week** (2014): One chemistry meeting at Universidade de Campinas (UNICAMP) and another at Universidade de Sao Paulo (USP) to undergraduates.
6. **Physics Winter School** (2014): Winter school at Universidade de Campinas (UNICAMP) about optics and photonics to undergraduates.

### Extracurricular Activities

- **Vice-president of the Brazil Society at Princeton** (2017-2018), 1. organizing events to promote connections among Brazilians and other students; 2. sharing the Brazilian culture with the Princeton University community.
- **Colloquium organizer** (2016-2017), working with a team, bringing researchers to share their projects weekly and publicizing it to the whole community near University of Sao Paulo, Brazil, for the CMnarios program of the Molecular Sciences Course.
- **Judge for Undergraduate and Graduate Research Poster Session** (2015), Neuroscience Symposium in Universidade Federal do ABC, Sao Paulo, SP
- **Participant of a Wikipedia Edit-a-thon** (2016), contributing with Wikipedia articles in Mathematics and Neuroscience.
- **Co-founder of Student Union** (2016), creating a Student Union for the course of Molecular Sciences.
- **Founder of Study Group for Math Olympiad** (2014-2016), preparing classes and inviting lecturers to special study sessions.
- **Judge for Molecular Sciences Prize at FEBRACE** (2015), Feira Brasileira de Ciencias e Engenharia, Brazilian Science and Engineering Fair

### Professional and Volunteering Experiences

- **Research Assistant** (2017-): I work with computational analysis of behavioral data at the Developmental Neuromechanics & Communication Lab at the Department of Psychology in Princeton University.
- **Private Tutor** (2017- & 2012-2014): I give mathematics and physics private lessons for high school and college students.
- **Research Assistant** (2017-2018): I helped applying surveys and transcribing data for the Stigma and Social Perception Lab at the Department of Psychology in Princeton University.
- **Network & Server Administrator** (2016-2018): I volunteered for the Molecular Sciences Course to maintain the website <http://www.ccm.usp.br/> and troubleshoot the students computer network.
- **Volunteer Teacher** (2017 & 2014): I gave a volunteer class for the Princeton Splash program in 2017, teaching Theoretical Neuroscience to High School students. During high school, I used to give volunteer science classes conducting experiments in low-income schools.

- **Video Lectures Editor** (2014-2016): I worked at Universidade de Sao Paulo preparing lectures scripts for video lectures and editing the video. I collaborate with a team and study contemporary learning issues.
- **Junior Enterprise Analyst** (2014): I worked as a volunteer analyst at POLI Junior, a Junior Enterprise at Universidade de Sao Paulo, using mainly Python and C/C++ as a work tool with a group.
- **Leader of Volunteer Group** (2012-2013): I organized a social-environmental group organizing donations for asylums and daycare centers and social and environmental awareness campaigns. I was part of the group since 2008.

### Additional skills

- **Languages:** I speak Portuguese, English, Spanish and French.
- **Computer Languages:** I use mainly Python and Matlab, but I also have experiences with C, C++, Julia, Java and Javascript.
- **Music:** I currently sing and help with the organization of an LGBTQIA+ inclusive a capella group intended to be a safe space to different minorities. In 2014 I helped creating an a capella group presenting, among other places, in asylums as community service. Additionally, I did piano classes from 2003 to 2013. In 2011 I won a second place at a National Piano Contest in Ituiutaba-MG (Brazil) and other minor awards.