THIBAULT ROUMENGOUS
Research Assistant - Engineer

E-mail: thi.roum@hotmail.fr
Website: www.thibaultroumengous.com

EDUCATION

- 2017-2021: Doctor of Philosophy (PhD) in Biomedical Engineering. Virginia Commonwealth *University, USA*
- 2015-2016: Master of Science in Bioengineering (with high honor). *Université Aix-Marseille, France*
- 2014-2015: Master (Maîtrise) of Science in Human movement (with honor). *Université de Toulon, France*
- 2011-2014: Undergraduate degree (B.S. equivalent) in Physiology and Rehabilitation (APAS). *Université de Toulon, France*

PROFESSIONAL EXPERIENCE

2019-Present: R&D Engineer, Signal processing and analysis, NIRSENSE project funded by NAVAIR, Bionica Labs, Richmond, VA.

- Developing and implementing state-of-the-art fNIRS signal processing pipelines (filtering, classification)
- Developed a centralized data processing platform on a remote server, automated, flexible and secure access
- 3D design and modeling of silicon and nylon parts for custom sensor patch
- Developed cognitive workload testing program (n-back) from open source python code base
- Debugging, assembling, running experiments and standardized tests with custom fNIRS device

2017-Present: Research Assistant; Rehabilitation Engineering to Advance Ability (REALab), College of Engineering, Virginia Commonwealth University.

- Designing procedures to monitor neurorehabilitation of tetraplegic patients using Transcranial Magnetic Stimulation
- Implemented and testing of a low-cost neuronavigation system using infrared motion tracking and open source software
- Mentoring up to 5 undergraduate students on different projects (DURI and DERI program mentor)
- Human subject experiments, data processing, statistical analysis, writing scientific papers

2018-2019: Mentor, biotechnologies and machine learning consulting, Startup Virginia, Capital One.

- Holding office hours, providing consulting for developing technology-based ventures

2016: Research Assistant; Rewire Lab, Department of Mechanical Engineering, the University of Texas at Austin.

- Designed and prototyped MRI-compatible force sensors and keyboards (using SLS 3D printing)
- Worked on motor control and neurofeedback using several neuroimaging techniques (fMRI, fNIRS, ECoG)
- Ran experiments, operated MRI scans
- Data processing/analysis using machine learning algorithms (MVPA, SMLR)

2014-2015: Research Assistant; LAMHESS (Human Performance Physiology Lab), Université de Nice.

- Collaborated with an R&D engineer developing smart clothing
- Interpolated twitch technique to assess Voluntary Activation of the knee flexors in athletes
- Data processing (electromyography, force/moment) and running human subject experiments

2014: Physical Therapist Assistant, Hospices Civiles de Lyon, Physical Rehabilitation Department.

- Spirometry testing, electrostimulation and patients follow-up

SKILLS

- Graphic design, web development and application programming (freelance professional experience)
- Coding Languages: Python, Matlab, R, Basic. WebDev: HTML, CSS, JS, PHP.
- Operating Systems: Windows, Ubuntu/Debian
- Machine learning algorithms (artificial neural networks) programming, data mining.
- Prototyping using modern advanced 3D printing technology (SLA, SLS, RAISE3D, Lulzbot)
- Software: Spike 2, FreeSurfer, Microsoft Office suite, Statistica, R, Adobe Premiere/Photoshop
- Audio engineering, Sound Design (Reaper, Logic)

- Mechanical Design and FEA analysis (SolidWorks suite)
- Leadership and team management
- Extensive knowledge of human neurosciences
- Fluent in French (native) and English (TOEFL: 104), Intermediary level in Spanish and Japanese

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CONFERENCES ABSTRACTS/PRESENTATIONS

- A. Reutter, **T. Roumengous**, C. L. Peterson. "Evaluation of a Low-Cost Navigation Technique for Transcranial Magnetic Stimulation". Biomedical Engineering Society annual conference, Philadelphia, PA, October 16-19th, 2019.
- Y. Zeineddine, **T. Roumengous**, C. L. Peterson. "Motor Evoked Potential Recruitment Curves Indicate Neuroplasticity after Spinal Cord Injury". Biomedical Engineering Society annual conference, Philadelphia, PA, October 16-19th, 2019.
- **T. Roumengous**, P. A. Howell, C. L. Peterson. "Voluntary Drive Amplifies Effects of Paired-pulse TMS and Arm Posture on Biceps Corticomotor Excitability". International Biomechanics Society Annual Meeting, Calgary, CANADA, August 4th, 2019.
- P. A. Howell, **T. Roumengous**, C. L. Peterson. "Increased Elbow Angle to Improve Measurement of Cortical Voluntary Activation of the Elbow Flexors". International Biomechanics Society Annual Meeting, Calgary, CANADA, August 4th, 2019.
- **T. Roumengous**, P. A. Howell, C. L. Peterson. "Biceps Voluntary Activation: Method To Calculate Pre-Stimulus Moment Affects Magnitude But Not Reproducibility". Summer Biomechanics, Bioengineering, and Biotransport Conference, Seven Springs, PA, June 27th, 2019.
- **T. Roumengous**, C. L. Peterson. "Voluntary Drive Increases Detectability of Changes in Corticomotor Excitability". Presented at the 2019 Virginia Academy of Science Annual Meeting, Norfolk, VA, May 23th, 2019.
- P. A. Howell, **T. Roumengous**, C. L. Peterson. "Innovative Methodologies to Reliably Assess Voluntary Activation of the Elbow Flexors". Central Virginia Society for Neuroscience annual symposium, Richmond, VA, March 24th, 2018.
- P. A. Howell, **T. Roumengous**, C. L. Peterson. "Cutaneous Stimulation and Arm Posture to Modulate Biceps Responses to Transcranial Magnetic Stimulation". Biomedical Engineering Society annual conference, Atlanta, GA, October 17-20th, 2018.

AWARDS/ACCOMPLISHMENTS/OTHERS

- National Center for Adaptive Neurotechnologies summer program (1 of 24 selected) funded by the NIH.
- Interdisciplinary Collaboration committee chair, Biomedical Engineering Graduate Student Council (2018-2019)
- French government scholarship to study abroad (2016)
- Biomedical Engineering Society member (since 2017)
- Volunteering with Sportable.org, Tennis coaching for disabled individuals.
- Volunteering/hosting educational sessions on science with REALab (National Biomechanics Day 2020, 2019, 2018)
- Therapeutic Patient Education Certification (2015)
- Writing: French poetry (published a book in 2014), novels
- Sports: Martial arts (black belt in Judo and Kendō, former competitive athlete), climbing, tennis, gymnastics
- Musician: Guitar (5 years of teaching experience), studio producing (produced an album and various music since 2015)