RUTGERS

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Graduate training in combining human neuroimaging with computational modeling focusing on brain connectivity and cognition

We are looking for a highly motivated and talented scientist-in-training to join the Cole Neurocognition Lab (http://colelab.rutgers.edu/) as a PhD graduate student. We are developing and applying exciting new approaches to understanding human brain organization and dynamics. These continuously-evolving approaches are then applied to understand the neural basis of cognition, psychiatric diseases, and aging/development. Special emphasis is placed on highly flexible cognition, such as cognitive control, learning, reasoning/decision-making, and general intelligence. Computational expertise, such as with machine learning, computational neuroscience, control theory, and/or software engineering are especially desirable. Possible training in neuroimaging analysis include fMRI, EEG/MEG, tDCS, TMS, and fusion approaches across modalities using computational models. Additional training is possible in computational neuroscience with neural mass models and deep learning models (artificial general intelligence and data-driven discovery of neural information transformations).

Lab's publications especially relevant to this position (see http://colelab.rutgers.edu/#publications):

- Ito T, Hearne L, Mill R, Cocuzza C, Cole MW (Preprint). "Brain network organization as the computational architecture of cognition". *arXiv*. arXiv:190703612
- Yang GR, Cole MW, Rajan K (2019). "How to study the neural mechanisms of multiple tasks". *Current Opinion in Behavioral Sciences*. doi.org/10.1016/j.cobeha.2019.07.001
- Cole MW, Ito T, Bassett DS, Schultz DH (2016). "Activity flow over resting-state networks shapes cognitive task activations". *Nature Neuroscience*. doi:10.1038/nn.4406
- Cole MW, Braver T, Meiran N (2017). "The task novelty paradox: Flexible control of inflexible neural pathways during rapid instructed task learning". *Neuroscience & Biobehavioral Reviews*. doi:10.1016/j.neubiorev.2017.02.009

The position will be at Rutgers University in Newark, NJ (13 miles from New York City, NY) and located in a recently renovated laboratory space in the Center for Molecular and Behavioral Neuroscience (CMBN), in the same building as the Rutgers University Brain Imaging Center. The position is in the Behavioral and Neural Science (BNS) Graduate Program, and is fully funded with a generous stipend for the expected duration of the program (5 years). The Cole Neurocognition Lab is a friendly and hard-working environment where one can interact with and learn from experts in cognitive neuroscience, cognitive psychology, network science, and computational neuroscience, in addition to other related fields. Interactions with colleagues in other labs and at nearby universities (NJIT, Penn, Princeton, NYU, Columbia, Temple) take the form of collaborations, seminars, social events, and regular meetings of the Integrative Neuroscience Discussion Group and the Newark Brain Connectivity Group.

Preferred attributes of candidates:
1) Computer programming skills; 2) Statistical analysis skills; 3) Excellent writing (and general communication) skills; 4) A passion for learning and making discoveries in neuroscience (and related fields); 5) Expertise in neuroscience, engineering, psychology, data science, and/or computer science research (or related field)

For more information on the lab's research visit http://colelab.rutgers.edu/

The deadline for applications is **January 21, 2020**, with a program start date of August 2020. Apply here: https://cmbn.rutgers.edu/behavioral-and-neural-sciences-graduate-program/