

**The Department of Psychological  
and Brain Sciences**

Ames Hall / 3400 N. Charles Street  
Baltimore MD 21218-2686

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410.516.5328 ~ fax 410.516.4478  
yant@jhu.edu

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Dear Colleagues,

I am writing in support of Patryk Laurent's application for a faculty position in your department. Patryk joined my lab as a postdoc in October 2009. He earned his PhD at the University of Pittsburgh where he worked primarily with Erik Reichle. His background provided him with expertise in learning theory, computational modeling, neuroimaging, and experimental psychology.

In graduate school Patryk co-authored two papers with Reichle, including an ambitious theoretically sophisticated account of eye movement behavior in reading that appeared in *Psychological Review*. In 2008 he published a computational theory of how salience and novelty can evolve from reinforcement learning; he was the sole author of this work, which appeared in *Neural Networks*.

Since arriving in my lab, Patryk has played a key role in two major lines of investigation. One line is documenting and further exploring our discovery of *value-driven attentional capture*: stimuli that have been associated with reward through learning come to acquire value that causes those stimuli to capture visual attention. This occurs despite the fact that the stimuli are otherwise inconspicuous, task-irrelevant, and no longer rewarded. This a novel instance of how past experience can modulate perception and behavior, and has implications for our understanding of both optimal and pathological behavior (in, for example, addiction). We have published two papers describing this work and have submitted two other manuscripts—several more are in the pipeline, including at least two of which Patryk is the lead author, which will be submitted within the next two weeks.

In a second line of investigation, Patryk is uncovering the cortical and subcortical mechanism of cognitive control. My lab has for years been detailing the *cortical* circuits for the control of task switches and attention shifts. Recently we have begun to examine in detail the possible role of subcortical structures, in particular the basal ganglia, that have are known to play a key role in motor control. Growing evidence from our lab and elsewhere has suggested that the selective mechanisms of the basal ganglia in motor control may also play a role in more “cognitive” acts of control like task switching that do not involve any overt motor behavior. We have submitted one paper reporting on fMRI evidence for this idea, and we are pursuing several other lines of investigation, including measurements of dopamine release in the striatum of the basal ganglia during acts of cognitive control using PET dopamine imaging. Patryk is extending our empirical investigations with novel computational models of the neural circuits that underlie cognitive control and the cortical and subcortical interactions that support flexible cognitive reconfiguration. He is adept at cutting edge neuroimaging data analysis methods, including multivoxel pattern analysis.

Patryk is a computationally sophisticated cognitive neuroscientist. He is equally comfortable collecting and analyzing behavioral and neuroimaging data as he is with developing computational models of the cognitive functions that carry out these tasks. This combination of cognitive neuroscience expertise and computational sophistication will serve him well as he establishes his own lab.

Although I have not observed his teaching in a traditional lecture course, I can say that Patryk has done a terrific job running our weekly fMRI journal club, which is attended by many grad students and postdocs in the cognitive neuroscience community at JHU—he organizes tutorial sessions to clarify the technical and methodological foundations of the papers that are read there, and he took a lead role when we offered a two-week-long fMRI short course for new fMRI researchers last year.

Patryk is a dedicated cognitive neuroscientist, and he will be an excellent mentor and teacher as well as a valued colleague. I think he is well positioned to establish a productive computational cognitive neuroscience laboratory. I am pleased to recommend him for a position in your department.

Sincerely,

A handwritten signature in black ink, appearing to read 'S. Yantis', with a period at the end.

Steven Yantis  
Professor and Chair