University of Pittsburgh

Learning Research and Development Center

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Dear Search Committee Members:

It is my pleasure to provide an enthusiastic recommendation for Patryk Laurent. Patryk was a student in our Neuroscience Ph.D. program, and while I was not his primary mentor I had the good fortune of interacting with him on several research projects and the pleasure of serving on his graduate student committees. Based upon this experience, it is my opinion that Patryk has outstanding potential to succeed as an independent scientist.

Patryk entered our training program with a strong computational modeling background. In his graduate work he took advantage of this background to explore the connections between modeling, functional neuroimaging, and cognitive theory. This can be seen clearly in his work with Dr. Erik Reichle, his primary advisor. Patryk brought into Erik's lab an interest in reinforcement learning and the ways in which such learning could be used to support the emergence of skilled behavior. The two worked together to explore the theoretical role of reinforcement learning in adaptive control of eye movements during reading. This was a true partnership. Erik is a leading expert in the reading and eye-movement control literature and his previously developed EZ-reader model has been quite prominent. But the EZ-reader model was intended to explain the behavior of already skilled readers and did not provide an account for how skilled eye-movement control could emerge through reading experience. Patryk brought this research question into the Reichle lab, along with the computational and theoretical expertise needed to assess whether reinforcement learning could serve as a viable mechanism to account for the emergence of skilled performance. The results of this work appeared in *Psychological Review*, arguably the premier theoretical journal is psychology. Although Patryk was the second author on this publication, my sense is that he deserves full credit for inspiring the work and equal credit for its execution.

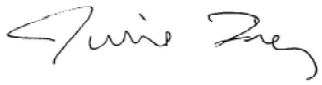
Patryk continued to explore his interests in reinforcement learning through his dissertation project. For his thesis work, Patryk combined modeling and neuroimaging in order to address a central question: are their modality-specific learning channels within the basal ganglia, or can learning about stimulus-response-outcome associations occur at a more abstract level? As I watched Patryck develop this line of work I was impressed with his rigorous approach, his quick mastery of the issues and methods involved in neuroimaging (a new method for him), and the degree to which he drew upon an exceptionally diverse set of literatures in order to motivate his experimental design and frame his expected results. The final project was of very high quality; his oral defense was superb and the written document was enthusiastically endorsed by his committee members. Key findings included evidence for channel-specific regions of basal ganglia activation, especially for conditions involving covert (as compared to overt) shifts of

attention. A manuscript reporting his findings is now under review; I am confident that it will garner broad interest within the cognitive neuroscience community.

Following the completion of his Ph.D., Patryk moved into a postdoctoral position with Dr. Steve Yantis. This struck me as a perfect match. It has provided an opportunity for Patryk to deepen his expertise in neuroimaging, while maintaining a continued focus on computational modeling, attentional control, and reinforcement learning mechanisms. His emerging publications from this postdoctoral fellowship represent exciting and innovative combinations of these methods. I also note that Patryk has continued to take advantage of collaborations initiated during his doctoral training in Pittsburgh. In particular, his recent work with Andreea Boston, a graduate student in Peter Strick's lab, marks a very unique blending of theoretical and neuroanatomical perspectives on the potential role of the cerebellum in reinforcement learning.

In summary, it is my opinion that Patryck has established a track record that demonstrates his productivity, scholarship, and creativity. His work spans a diverse set of research topics and he has acquired proficiency with a range of different research methodologies. He is a superb candidate for a faculty position, and I am confident that he would be a major assess to your department.

Regards,



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