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The EBE Applications Board  
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To Whom it may concern,

I intend to start a Masters Degree at the UCT Robotics and Agents Laboratory, in the Mechanical Engineering Department, under the supervision of Dr Anet Potgieter and Camaren Peter. Both Dr Potgieter and Mr Peter have agreed to supervise me for my proposed topic.

My proposed masters is in the field social-ecological modelling and monitoring. I wish to continue from the work done by Camaren Peter in his PhD. Mr Peter's PhD involved developing a formal participatory framework to develop large scale social-ecological models, that is models of systems where both social human factors and ecological factors interrelated, for the purpose of informing policy makers. This framework (Bayesian Participatory-based Decision Analysis or BPDA) developed large scale Bayesian networks, a type of statistical model often used in machine learning, to represent the interactions of the salient variables in an environment.

I propose to convert these Bayesian models into real-time monitoring systems by linking them into real-time or near real-time data-sources. There are tow purposes for this. Firstly, to create a system that can validate or invalidate (more importantly to invalidate) the correctness of a model, while at the same time using the real-time data to continually improve the model. Secondly I wish to develop a system that can interrogate the decisions made based on the assumptions drawn from the model. I wish to develop a system that can codify decision assumptions, then continually check that the model still holds these assumptions and that the assumptions are born out by reality.

The proposed masters covers many fields, including complexity theory, ecological modelling, and agent-based machine learning. Given the breadth of fields involved I intend be supervised by Camaren Peter for the social-ecological side of the Masters and Anet Potgieter for the technical side of the Masters.

Should you have any questions please don't hesitate to contact me.

Regards,

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