

Bernát Wiandt

EIT Digital Budapest DTC

PhD topic: Optimization of self-organizing computer

PhD supervisor: Vilmos Simon, BME

Contact: wiaandt.bernát@gmail.com



'The EIT Digital Doctoral School complements the curriculum of the university nicely. It allows us to view our work from a different perspective and justify the feasibility of our ideas in the real world.'

Achievements & further plans

Bernát is approaching the final phase of his PhD studies. His initial work was focused on **biologically inspired solutions for information dissemination in ad hoc mobile networks**. Results from this phase were published in peer reviewed conferences and articles. Lately, he has been focusing on self-organizing approaches to patrolling with mobile agents. He is spending his geographical mobility at IRIDIA (part of the Université Libre de Bruxelles) under the supervision of Marco Dorigo, where he is developing decision making algorithms for binary decision problems in a swarm robotics setting.



Experimenting with new types of patrolling algorithms enables the large-scale civilian and governmental utilization of UAV technology for precision agriculture or border protection tasks, potentially making these fields more efficient and, therefore, cheaper.

Educational status at Spring semester of 2016:



RA



OR



BMD



GH



Mobility



BDExp.

Research topic

Bernát designed a genetic programming language to implement decision making algorithms for information dissemination in ad hoc mobile networks. He investigated several well known heuristics and experimented with blending them in accordance with the requirements of the network in order to be able to disseminate information as efficiently as possible.

Bernát investigated the state of the art of patrolling algorithms for autonomous agents and he is taking a new approach to achieve optimal patrolling on general graphs with dynamic structure. This scenario can be a model for solving a real world patrolling problem where the traveling time for each road section changes dynamically throughout the day.

Decision problems are the third part of Bernát's research. He is currently spending his geographical mobility at IRIDIA where he is designing algorithms for binary decision problems. This involves the theoretical investigation of the properties of the algorithms and experimental evaluation in a multi agent simulator and a swarm of real robots