Faculty Flagship Program, NICTA Priority or Major Initiative (Immersive Analytics, SensiLab, Data Science):

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| NICTA Optimization |

Priority project title:

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| Real-time data acquisition for adaptive crowd modelling |

This project aligns with NICTA: Yes

Project description:

Describe the project aim, the problems it will solve, and the expected outcomes (250 words)

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| This PhD project is part of a larger collaborative project between the faculties of IT, Engineering, and Science which develops methods for reliable multi-scale modeling of crowd dynamics for disaster prevention.  This project aims to develop methods **that support planning and prediction of crowd movements based on data from past events as well as adaptive planning for live events as they unfold.** This two-fold approach will facilitate superior **risk management in urban design and improved emergency response planning**. The key to achieving these aims are multi-scale modelling methods together with high performance simulation and optimisation algorithms specifically designed for these computational models.  The proposed PhD project works at the interface between adaptive optimization methods and real-time data acquisition for these. It will investigate suitable **adaptive optimization methods and their data requirements**, possible ways to acquire the **required real-time crowd movement data via a variety of sources and on different timescales (mobile phone activity, traffic flow data, visual flow data, social media activity, etc)**, data fusion from such sources, and it will investigate **the comparative utility of these data sources for effective and flexible disaster management**. |

Project requirements in terms of skills set required of prospective students:

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| Experience with mobile application development  Preferably knowledge of combinatorial optimization techniques |

Reasons why prospective students should engage in this project:

List the incentives the research group could provide (e.g. grants to support student tuition fee, working industry)

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| Tuition fee waiver, NICTA scholarship |

Potential supervisors:

For each potential supervisor, provide the amount of grant available to support students from 2014 over course of candidature, and tick the institutions (Warwick or IITB) in which you want to have joint supervised students in this project.

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|  | Name | Grant/Supervisor contribution available to support student | Warwick | IITB |
| 1 | Bernd Meyer | yes |  |  |
| 2 | Aldeida Aleti | ECR |  |  |
| 3 |  |  |  |  |