Gerdus Benadé

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RESEARCH INTERESTS

Discrete optimization, decision diagrams and graph-related problems. Computational social choice.

QUALIFICATIONS

- **Carnegie Mellon University** — Pittsburgh, PA
  PhD student in Operations research (Tepper School of Business) — *2014–present*
    - Selected coursework: Linear/Integer/Constraint programming, Advanced integer programming, Combinatorial optimization, Graph theory, Networks and matchings, Algorithmic game theory, Machine learning, Applied machine learning, Modern convex optimization, Analytic performance modelling.

  MSc Operations Research (Tepper School of Business) — *2014–2016*
- **Stellenbosch University** — Stellenbosch, South Africa
  MSc Operations Research *(cum laude)* under JH van Vuuren — *2013–2014*
    - Thesis: Designing a distributed system for enumerating mutually orthogonal Latin squares

  BScHons Operations Research *(cum laude)* — *2012*
    - Received the **Dean's Medal**, awarded annually to the graduate with the best overall academic performance in the Faculty of Natural Sciences

  BSc Mathematics and Operations research *(cum laude)* — *2009–2011*

- **Standardised test scores** — *October 2013*
    - General GRE V/Q/AW: 169/170/4.5
    - TOEFL: 118/120

AWARDS & ACHIEVEMENTS

Dean's Medal (Faculty of Natural Sciences, Stellenbosch University)	2013
International Mathematical Contest in Modelling (MCM) Meritorious winners	2011
Rubbi Prize for first position in class in Mathematics	2009–2011
Rector's list of top 32 academic first years university-wide	2009

SCHOLARSHIPS & BURSARIES

William Larimer Mellon Fellowship	2014
Zoltners Fellowship (Tepper School of Business, CMU)	2014
National Research Foundation Innovation Honours, Masters Scholarship	2012–2014
MIH Media Lab Bursary	2012–2014
Harry Crossley Foundation Merit Masters Scholarship (declined)	2013
Stellenbosch University Academic Merit Bursary	2009–2013

LEADERSHIP & MISCELLANEOUS

House committee/Deputy head of Eendrag Men's Residence (SU)	2010/2012
Summer school exchange to Chinese University of Hong Kong	2012
Served on the Natural Sciences student committee	2009/2010

PUBLICATIONS & PRESENTATIONS

Peer-reviewed papers

3. Preference Elicitation for Participatory Budgeting. JG Benade, S Nath, AD Procaccia, N Shah. *Accepted to AAAI 2017.*

2. On the enumeration of mutually orthogonal Latin squares. JG Benadé, AP Burger, JH van Vuuren. *Proceedings of the 2013 ORSSA Annual Conference*, pp. 40-49, ISBN 978-0-7972-1468-2, 2013.

1. Non-Negative Matrix Factorization for Learning Alignment-Specific Models of Protein Evolution. B Murrel, T Weighill, J Buys, R Ketteringham, S Moola, JG Benadé, D Kaliski, T Hands, K Scheffler. *PLoS ONE*, 6(12), doi:10.1371/journal.pone.0028898, 2011.
   * Poster won the 'Best Undergraduate research' award at the 2011 SMBE in Kyoto.

Papers in preparation

1. Tighter bandwidth bounds from the branching dual. With JN Hooker.

2. Recovering truth from votes with bounded errors. With AD Procaccia and A Kahng.

3. Crowdsourcing student evaluations. With R Ravi and W Gatterbauer.

Selected presentations

3. Solving the branching dual of a discrete optimization problem. With JN Hooker. INFORMS 2016 (Nashville, TN), 12–15 November 2016.

2. HIV diagnostic service delivery in South Africa: Scenario analysis using a multi-objective version of the uncapacitated fixed-charge location model. With L Oosthuizen, J Bekker. *IFORS 2014* (Barcelona, Spain), 13–18 July 2014.

1. Using volunteer computing for the enumeration of mutually orthogonal Latin squares. With AP Burger, JH van Vuuren.
   - *IFORS 2014* (Barcelona, Spain), 13–18 July 2014.
   - *9th BOINC workshop* (Grenoble, France), 25—27 September 2013.

FORMAL EMPLOYMENT HISTORY

- **Carnegie Mellon, Stellenbosch University**
  Teaching Assistant: various optimization courses   *2012-2015*
  – Provided one-on-one and group tutoring during weekly labs, graded tutorials and tests.

- **Oprecon (now Xtranda)**   OR Consulting, South Africa
  Intern/programmer   *Nov 2011 – Jan 2012*
  – Implemented search algorithms in C# for a nurse roster scheduling problem.

TECHNICAL SKILLS & OTHER EXPERIENCE

- Consulted the National Health and Laboratory Service in South Africa about the impact of point-of-care diagnostic testing for HIV.

- Practical experience modelling and developing decision support systems in the farming industry, specifically related to water management at a reservoir and packaging at a fruit farm.

- Implemented a volunteer computing project for combinatorial optimization in C++ using BOINC.

- Have programmed in C++, Java, C#, Python, Julia; familiar with Mathematica and LaTeX.

- Have travelled to 29 countries.