

Gerdus Benade

Carnegie Mellon University, Pittsburgh PA

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RESEARCH INTERESTS

Algorithmic game theory, computational social choice and fair division. Discrete optimization.

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, Theorist’s toolkit, 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 squaresBScHons 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 SciencesBSc 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

Egon Balas award: Best paper in OR/ACO (CMU) 2017
Dean’s Medal (Faculty of Natural Sciences, Stellenbosch University) 2013

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
Stellenbosch University Academic Merit Bursary 2009–2013

FORMAL EMPLOYMENT HISTORY

- **Amazon**
Research Scientist intern in Supply Chain Optimization Technologies *May-Aug 2017*
- **Carnegie Mellon, Stellenbosch University**
Teaching Assistant: various optimization courses *2012-2015*
- **Oprecon (now Xtranda)** OR Consulting, South Africa
Intern/programmer *Nov 2011 – Jan 2012*

PUBLICATIONS & PRESENTATIONS

Peer-reviewed papers

5. Optimization bounds from the bandwidth dual. JG Benade, JN Hooker. *INFORMS Journal of Computing* - Accepted with minor revisions.
4. Making right decisions based on wrong opinions. JG Benade, A Kanhg, AD Procaccia. *EC 2017*.
3. Preference elicitation for participatory budgeting. JG Benade, S Nath, AD Procaccia, N Shah. *AAAI 2017*.
* Awarded Egon Balas prize for best student paper in OR/ACO 2017 (CMU).
2. On the enumeration of mutually orthogonal Latin squares. JG Benade, 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 Benade, 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. Low-distortion rankings from highly opaque preferences. With AD Procaccia, M Qiao.
2. Ranking students using misleading questions. With R Ravi, N Ho-Nguyen, W Gatterbauer. (Nov 2017: Under review)
3. How to make envy vanish over time. With AD Procaccia, A Kazakhov, CA Psomas. (Nov 2017)

Selected presentations

4. Preference elicitation for participatory budgeting. With S Nath, AD Procaccia, N Shah.
 - *AAAI 2017* (San Francisco, CA), Feb 2017.
 - *INFORMS 2017* (Houston, TX), Oct 2017.
3. Solving the branching dual of a discrete optimization problem. With JN Hooker. *INFORMS 2016* (Nashville, TN), 12–15 November 2016.
 - *INFORMS 2016* (Nashville, TN), Nov 2016.
 - *INFORMS Optimization society 2017* (Denver, CO), Mar 2018.
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.

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 L^AT_EX.