Helmut Wahanik, PhD

Email: hwahanik@gmail.com
2300 Brays Lane, Oakville, ON, Canada
Cel: (289) 981-3731
Status in Canada: Permanent Resident.

Areas of focus

Applied Mathematics:
Scientific Computing, Numerical Methods, Mathematical Modelling.

Software Development:
C#, .NET, C++, Python, Visual Studio, Visual Studio Code, TFS Source Control, Linux.

Selected publications and talks

Please find a list of publications and talks at: https://github.com/hwahanik

Education

2015 - 2016 **Postdoctoral Fellow - Computer Science**
University of Calgary, Calgary-Alberta
Research on polygon mesh processing in Python, C++, and Trelis. Collaboration with the Geo-innovation research group at Aramco Research Center, Houston, Texas, USA.

2007-2011 **PhD in Applied Mathematics**
Instituto de Matemática Pura e Aplicada (IMPA), Rio de Janeiro-Brazil, www.impa.br
Supervised by TUDelft-The Netherlands.
Thesis work in shock waves and rarefactions of partial equations modelling porous media flow. Numerical computing and optimization algorithms written in C++ and Matlab, in Linux. For completion of the Ph.D, two exams were presented: in Applied Mathematics, Scientific Computing, and Fluid Dynamics, and in Mathematical Analysis (Functional analysis, Fourier analysis).

2006-2007 **Scientific Computing Advanced Training**
University of Bristol, Bristol-UK.
EU grant for young scientists, Department of Mathematics, University of Bristol-UK.
Intensive training in scientific computing for simulating a large-scale climatological vortex using numerical Navier-Stokes models (code in Matlab).

2005-2006 **MSc in Computational Mathematics and Modelling**
IMPA, Rio de Janeiro-Brazil
Applied Partial Differential Equations, Scientific Computing, Numerical Methods, Numerical Analysis.

1999-2004 **BSc in Mathematics.**
Universidad de los Andes, Bogotá-Colombia

Professional Experience

Jun 2016 - current
Senior Software Engineer
Waterloo Hydrogeologic, Waterloo-Ontario, https://www.waterloohydrogeologic.com
Coding of the leading scientific computing software for groundwater simulation, Visual MODFLOW Flex; code is based on large object-oriented architecture with 180+ projects and more than 7 million lines of code, in C#, .NET, C++, F#, and Fortran.

Jan 2019 - current
Data Scientist Consultant
Raymond James, Victoria-British Columbia, http://www.sageconnectedinvesting.com
Development of data science and quantitative analysis workflows for SAGE Mutual Fund from Raymond James Financial (https://www.raymondjames.ca). Framework is based on Black-Scholes options pricing, risk and PnL evaluation. Data acquisition is based on Reuters live data feed. Code based on Python (Anaconda), Visual Studio Code, and Excel.

2015 - 2016
Research Project Manager
University of Calgary, Calgary-Alberta.
Member of the Interactive Modelling, Visualization and Analytics (illustraRes) research group, working as a project manager of applied research for Aramco Research.

2011-2015
Research Scientist
Schlumberger, Rio de Janeiro-Brazil.
Research on parallel algorithms for seismic tomography based on Transdimensional MCMC, where the dimension of the space of parameters is a stochastic variable. Worked on diverse projects in data science, applied statistics, business intelligence, and scientific computing.

Projects:
• Seismic tomography research together with Schlumberger Gould Research (SGR) at University of Cambridge-UK, and University of Edinburgh-UK. Link to tMCMC publications
• Application of parallel processing techniques in Fortran, MPI, and Python, in Linux, together with University of Cambridge-UK. Link to tMCMCTomography code
• Author of statistics study for the evaluation of the reliability of deepwater wells in the Gulf of México.
• Research on characterization of Carbonates Rock lab samples. Link to papers
• Research in modelling of well fluids jointly with Schlumberger Moscow Research, Moscow-Russia.
• Delivered crucial business intelligence solutions based on game theory and optimization, for maximization of revenue and creation of winning strategies for bidding contracts valued in USD 200 million.

Experience in education

2007-2011 Teaching assistant for mathematics graduate students, IMPA, Rio de Janeiro.
2006-2007 Teaching assistant for undergraduates in math and physics, Department of Mathematics, U. of Bristol-UK.
1999-2004 Lecturer, Universidad de los Andes. Lecturer for the courses: Statistics for the Social Sciences, Linear Algebra, and Differential Calculus. Teaching assistant for several undergraduate courses, including Probability, and Calculus for Biologists.

Awards

2005-2011 PhD and MSc Full Graduate Scholarships, IMPA, Rio de Janeiro-Brazil
2006-2007 Scientific Computing Advanced Training EU-Mobility Grant, Dept. of Mathematics, U. of Bristol-UK
2000 Henry Yerly Scholarship of Excellence, Dept. of Mathematics, Universidad de los Andes, Bogotá-Colombia

Other

Hobbies: Running, swimming, spending time with my wife, and with my beloved daughter and son.
Languages: English (*fully proficient*), Spanish (*native*), Portuguese (*as a native Brazilian*).