

Cover letter

Guangning Tan

Gary Guangning Tan was born and raised in Guangzhou, China. He received in 2010 his Bachelor degree in Electrical and Communication Engineering at Sun Yat-sen University, Guangzhou, and in 2012 his Master degree in Computational Science and Engineering at McMaster University, Hamilton, Ontario, Canada. Then he continued to do research in the same area at McMaster. Currently he is a fourth-year PhD candidate.

He is supervised by Professor Nedialko Stoyanov Nedialkov. They collaborate on research with Professor John Derwent Pryce from Cardiff University, the UK, and his PhD student Ross McKenzie.

Tan's research interests are mainly numerical methods of DAEs (differential-algebraic equations) and ODEs, MATLAB and C++/C programming, automatic differentiation, numerical analysis, and parallel computing. He focuses on the structural analysis methods of DAEs and Taylor series methods for solving DAEs. He teaches tutorials in courses such as Scientific Computing, Machine-level Programming, and Systems and Signals. Tan was awarded in 2015 the best teaching assistant by Software Engineering Club, Department of Computing and Software, McMaster.

Tan is the leading author of the DAESA code, a MATLAB software for structural analysis of DAEs. DAESA allows convenient translation of a DAE into a MATLAB function, and provides a good many useful functions for understanding and exploring the DAE's structure. This tool continuously facilitates the group's research.