

Stanford



Holger Christian Philipp Teichgraeber

Ph.D. Student in Energy Resources Engineering

Bio

BIO

Holger Teichgraeber is a Ph.D. candidate in the Department of Energy Resources Engineering at Stanford University. He is a Wells Family Stanford Graduate Fellow and is advised by Prof. Adam Brandt.

In his research, he focuses on applying state-of-the-art computational tools at the intersection of optimization and machine learning to energy systems problems. As an example, he has worked extensively on the development of new algorithms and applications of time-series aggregation for infrastructure planning and operations. Out of his research, two open-source software packages have emerged: TimeSeriesClustering implements unsupervised learning methods for time-series data ([git.io/TimeSeriesClustering](https://github.com/HolgerTeichgraeber/TimeSeriesClustering)), and CapacityExpansion provides an extensible, data-driven infrastructure planning tool for energy systems ([git.io/CapacityExpansion](https://github.com/HolgerTeichgraeber/CapacityExpansion)).

Holger has previously interned at the battery software company Doosan GridTech; in the renewable energy forecasting division of Vaisala (formerly 3Tier); in the market optimization group at RWE Power, one of Europe's largest utility companies; and at ThyssenKrupp, one of the world's largest steel producers.

HONORS AND AWARDS

- Outstanding Achievement in Mentoring Award, Stanford University (06/04/2019)
- 2nd place winner, SunCode 2019 (largest US cleantech hackathon), Powerhouse (05/18/2019)
- Grid Sciences Winter School & Conference Scholarship, Los Alamos National Laboratory (01/07/2019)
- Centennial Teaching Assistant Award, Stanford University (06/17/2017)
- Stanford Graduate Fellowship in Science and Engineering (SGF), VPGE Stanford University (09/01/2014)
- Scholarship, Member, Studienstiftung des deutschen Volkes/ German National Academic Foundation (01/01/2011)

PROFESSIONAL AFFILIATIONS AND ACTIVITIES

- Member, The Association of German Engineers (VDI - Verband Deutscher Ingenieure) (2011 - present)

EDUCATION AND CERTIFICATIONS

- Ignite Certificate, Stanford Graduate School of Business , Ignite Program in Entrepreneurship and Innovation (2018)
- MS, Stanford University , Energy Resources Engineering (2016)
- BS, RWTH Aachen University , Mechanical Engineering (2014)
- Exch. Student, Research Scholar, University of California, Davis , Chemical Engineering (2013)

STANFORD ADVISORS

- Sally Benson, Doctoral Dissertation Reader (AC)

- Louis Durlinsky, Doctoral Dissertation Reader (AC)
- Adam Brandt, Doctoral Dissertation Advisor (AC)

Research & Scholarship

LAB AFFILIATIONS

- Adam Brandt, Environmental Assessment Optimization Group (9/1/2014)

Professional

WORK EXPERIENCE

- Research Intern - Vaisala (6/2015 - 9/2015)
- Power Plant Engineering Intern - RWE Power AG (10/2013 - 1/2014)
- Undergraduate Researcher - UC Davis, Chemical Engineering (1/2013 - 6/2013)
- Technical Intern - Siempelkamp Giesserei (3/2011 - 3/2011)
- Engineering Intern - ThyssenKrupp Nirosta GmbH (5/2010 - 7/2010)

Publications

PUBLICATIONS

- **Clustering methods to find representative periods for the optimization of energy systems: An initial framework and comparison** *APPLIED ENERGY*
Teichgraeber, H., Brandt, A. R.
2019; 239: 1283–93
- **Design and operations optimization of membrane-based flexible carbon capture** *International Journal of Greenhouse Gas Control*
Yuan, M.
2019; 84: 154-163
- **Optimal design and operations of a flexible oxyfuel natural gas plant** *Energy*
Teichgraeber, H., Brodrick, P. G., Brandt, A. R.
2017; 141: 506-518
- **Identifying and Evaluating New Market Opportunities with Capacity Expansion Models** *Stanford Clean Energy Finance Forum*
Teichgraeber, H., Brandt, A. R.
2017: 1–12
- **CO₂ vs Biomass: Identification of Environmentally Beneficial Processes for Platform Chemicals from Renewable Carbon Sources** *12th International Symposium on Process Systems Engineering & 25th European Symposium on Computer Aided Process Engineering (PSE2015/ESCAPE25)*
Sternberg, A., Teichgräber, H., Voll, P., Bardow, A.
2015: 1361–66
- **An economic receding horizon optimization approach for energy management in the chlor-alkali process with hybrid renewable energy generation** *JOURNAL OF PROCESS CONTROL*
Wang, X., Teichgraeber, H., Palazoglu, A., El-Farra, N. H.
2014; 24 (8): 1318-1327