

Research I, Room 81,
Jacobs University Bremen,
28759, Bremen, Germany

✉ t.liu@jacobs-university.de
🌐 tianlinliu.com

RESEARCH INTEREST

Computational Neuroscience, Machine Learning.

EDUCATION

Jacobs University Bremen, Germany 09/2017 to 06/2019 (expected)
Master of Science in Data Engineering
Advisor: Professor Herbert Jaeger

Jacobs University Bremen, Germany 09/2013 to 06/2016
Bachelor of Science in Mathematics
Advisor: Professor Götz Pfander

AWARDS AND SCHOLARSHIPS

Best paper finalist award (3rd place out of 467 accepted papers) awarded by the IEEE NER 2019 conference. 03/2019

SmartStart-1 fellowship 2018 – 2019
awarded by the Bernstein Network of Computational Neuroscience and the Volkswagen Foundation

Travel award 08/2018
awarded by the Biocreative/OHNLP workshop of ACM-BCB 2018.

President's List distinction for academic excellence 2017 – 2018
awarded by Jacobs University Bremen.

Merit-based scholarship for master students 2017 – 2018
awarded by Jacobs University Bremen.

Merit-based scholarship for undergraduate students 2013 – 2016
awarded by Jacobs University Bremen.

PUBLICATIONS

- [1] **Tianlin Liu**, Lyle Ungar, and João Sedoc. Continual Learning for Sentence Representations Using Conceptors. Manuscript submitted to the *17th Annual Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies (NAACL)*, Minneapolis, 2019.
- [2] Xu He, **Tianlin Liu**, Fatemeh Hadaeighi, and Herbert Jaeger. Reservoir transfer on analog neuromorphic hardware. In *Proceedings of the 9th International IEEE EMBS Conference on Neural Engineering (NER)*, San Francisco, CA, 2019.
- [3] **Tianlin Liu**, Lyle Ungar, and João Sedoc. Unsupervised post-processing of word vectors via conceptor negation. In *Proceedings of the 33rd AAAI Conference on Artificial Intelligence (AAAI-2019)*, Honolulu, 2019.
- [4] **Tianlin Liu**, João Sedoc, and Lyle Ungar. Correcting the common discourse bias in linear representation of sentences using conceptors. In *Proceedings of ACM-BCB-2018 Workshop on BioCreative/OHNLP Challenge*, Washington, D.C., 2018.
- [5] **Tianlin Liu**. A consistent method for learning OOMs from asymptotically stationary time series data containing missing values. Preprint. <https://arxiv.org/pdf/1808.03873.pdf>
- [6] **Tianlin Liu** and Arvid Kappas. Predicting engagement breakdown in HRI using thin-slices of facial expressions. In *Proceedings of AAAI-2018 Workshop on Affective Content Analysis*, New Orleans, 2018.
- [7] **Tianlin Liu** and Dae Gwan Lee. Fast binary compressive sensing via smoothed ℓ_0 gradient descent. In *Proceedings of 5th International Workshop on Compressed Sensing Theory and its Applications to Radar, Sonar, and Remote Sensing (CoSeRa-2018)*, Siegen, Germany, 2018.

RESEARCH EXPERIENCE	<p>Jacobs University Bremen, Germany 09/2017 to date</p> <p><i>Research assistant</i></p> <ul style="list-style-type: none"> • Supervisor: Professor Herbert Jaeger • Develop provable learning methods for Observable Operator Models (OOMs), an episodic model for stochastic systems emulating information gain processes. <p>Jacobs University Bremen, Germany 02/2018 to date</p> <p><i>Research assistant</i></p> <ul style="list-style-type: none"> • Supervisor: Professor Herbert Jaeger • Design and deploy reservoir computing algorithms on the Dynap-se board, which is a neuromorphic architecture tiling a number of analog microchips for Spiking Neural Networks. This project is funded by the NeuRAM3 EU Horizon 2020 Program. <p>University of Pennsylvania, Philadelphia 05/2018 to 09/2018</p> <p><i>Visiting researcher</i></p> <ul style="list-style-type: none"> • Supervisor: Professor Lyle Ungar • Probed distributional representations of words (a.k.a., word vectors) with spectral decomposition methods. <p>Chinese University of Hong Kong, Hong Kong 09/2016 to 03/2017</p> <p><i>Research assistant</i></p> <ul style="list-style-type: none"> • Supervisor: Professor Defeng Wang and Professor Lin Shi. • Applied compressive sensing methods on Magnetic Resonance Imaging (MRI); developed an infrastructure for automatically reconstructing 3D Spine Model from Bipolar X-ray Images. <p>Jacobs University Bremen, Germany 09/2016 to 03/2017</p> <p><i>Research assistant</i></p> <ul style="list-style-type: none"> • Supervisors: Professor Götz Pfander and Dr. Dae Gwan Lee. • Designed efficient Compressive Sensing algorithms tailored for binary ($\{0, 1\}$-valued) signal reconstruction.
TEACHING ASSISTANT	<p><i>Principles of Statistical Modeling</i> of Professor Herbert Jaeger Spring 2018</p> <p><i>Machine Learning</i> of Professor Herbert Jaeger Spring 2018</p> <p><i>Stochastic Methods</i> of Professor Sören Petrat Fall 2017</p> <p><i>Linear Algebra & Calculus for Graduate Students</i> of Professor Igors Gorbovickis Fall 2017</p> <p><i>Applied Analysis</i> of Dr. Alexandre Monnet and Professor Dierk Schleicher Spring 2016</p>
CONFERENCE AND WORKSHOP ATTENDANCE	<p>Cognitive Computing 2018, Hannover, Germany. 12/2018</p> <p>Bernstein Conference 2018, Berlin, Germany. 09/2018</p> <p>ACM-BCB 2018, Washington, D.C., USA. 08/2018</p> <p>Interdisciplinary College (IK) 2018, Mohnesee, Germany. 03/2018</p> <p>AAAI 2018, New Orleans, USA. 02/2018</p> <p>The 2nd Young Researchers Event of HBP, Geneva, Switzerland. 09/2017</p> <p>AISTATS 2016, Cadiz, Spain. 05/2016</p> <p>Interdisciplinary College (IK) 2016, Mohnesee, Germany. 03/2016</p>
PROGRAMMING SKILLS	Python, MATLAB, C, \LaTeX .
LANGUAGES	<p>Mandarin – mother tongue</p> <p>English – fluent</p> <p>German – working knowledge</p>
REFERENCES	<p>Professor Herbert Jaeger Professor Arvid Kappas Professor Lyle Ungar Jacobs University Bremen Jacobs University Bremen University of Pennsylvania h.jaeger@jacobs-university.de a.kappas@jacobs-university.de ungar@cis.upenn.edu</p>
OUTREACH	Since 2016, I am a part-time writer for <i>Zhishifenzi</i> (http://www.zhishifenzi.com), a Chinese online media reporting research advances of basic sciences for public understanding.