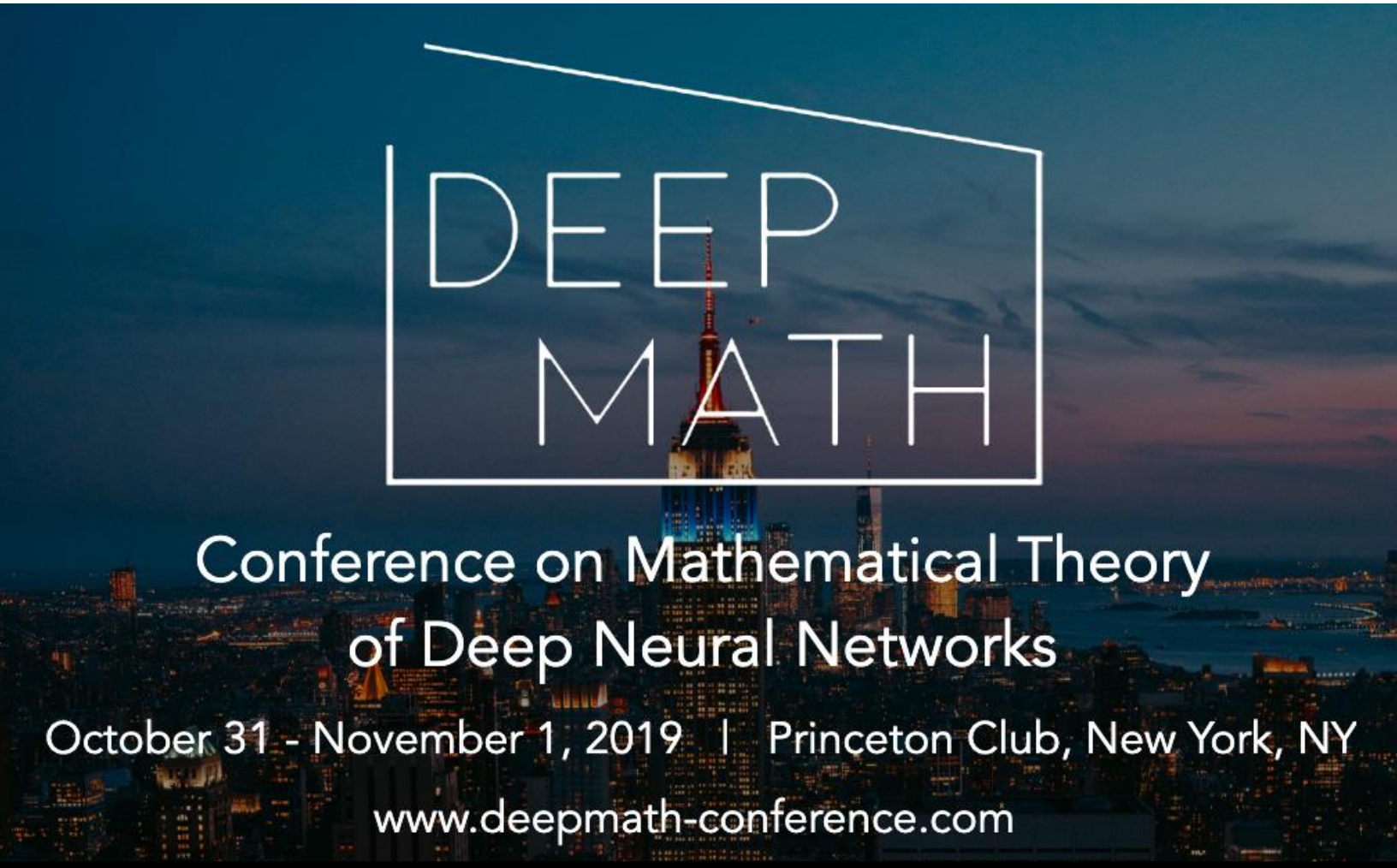

Conference Program

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Princeton University

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New York University

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We gratefully acknowledge support from Jonathan D. Cohen (Princeton University), Daniel D. Lee (Cornell Tech), Sebastian Seung (Princeton University), David Tank (Princeton University) as well as the following staff members of the Princeton Neuroscience Institute: Daisy Anderson, Ed Clayton, Melissa M. DiMeglio, Hande Gumuskemer and Michelle A. Horgan.

General Information

Two rooms:

- James Madison Room (lectures)
- Alexander Hamilton Room (breakfast, lunch and poster session)

WiFi:

- Network name: ORANGE
- Password: letmein15

Poster setup: October 31 (Thursday), 2 – 5pm in Alexander Hamilton Room

Livestreaming: https://deepmath-conference.com/live-stream

Twitter Handle: @deepmath1

Facebook page: DeepMath

Venue

The Princeton Club of New York (PCNY) is a private club located in Midtown Manhattan, steps away from Grand Central Station, Bryant Park and the Theater District. The Clubhouse offers more than 9,000 square feet of flexible meeting, conference and banquet space.

Note: the Princeton Club has a "smart casual" dress code.

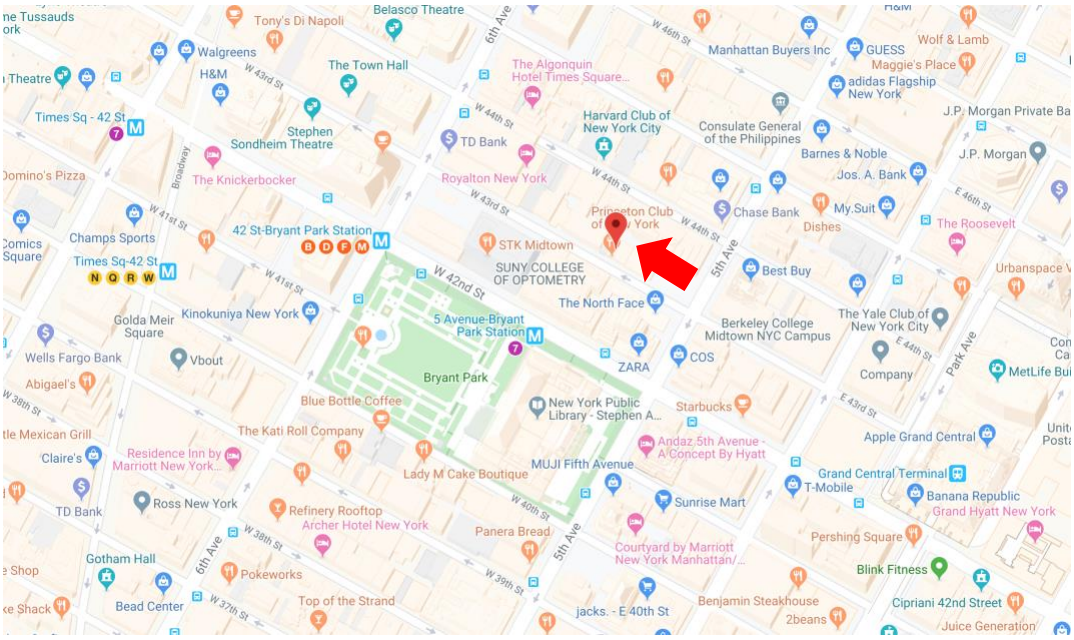
Directions

The Princeton Club is located on 43rd street between 5th and 6th avenue.

If you are taking the subway, the closest stops are the BDFM train and NQRW train, which stop at 42nd street.

If you are coming from New Jersey, the Princeton club is a short walk from Penn Station or the 33rd street stop off the PATH train.

If you have any questions, feel free to contact the Princeton club directly.



Schedule & Talks

Date	Time	Event / Title	Presenting Authors
Oct 31 Thursday	08:00 - 08:45	***Breakfast & Registration***	
	08:45 - 09:00	***Opening Remarks***	Ahmed El Hady (Princeton University)
	09:00 - 10:00	***Deep Learning on the border between success and failure***	Eran Malach (Hebrew University)
	10:00 - 11:00	***DeepManifolds: Geometry of Computation in Deep Networks***	Haim Sompolinsky (Hebrew University)
	11:00 - 12:00	***Contributed Speakers***	
	11:00 - 11:20	*No Spurious Local Minima in Deep Quadratic Networks*	Abbas Kazemipour (Stanford University)
	11:20 - 11:40	*GE Bounds for Deep Learning Regressors*	Jaweria Amjad (UCL)
	11:40 - 12:00	*Robust Learning with Jacobian Regularization*	Dan Roberts (Diffeo)
	12:00 - 14:00	***Lunch***	
	14:00 -15:00	***Keynote: Is Optimization the Right Language to Understand Deep Learning?***	Sanjeev Arora (Princeton University, IAS)
	15:30 - 16:30	***Dynamics and Generalization in Deep Neural Networks***	Tomaso Poggio (MIT)
	16:30 - 17:30	***Deep Learning and Operator-Valued Free Probability: Training and Generalization Dynamics in High Dimensions***	Jeffery Pennington (Google Brain)
	17:30 - 20:00	***Poster Session & Snacks***	
Nov 1 Friday	08:00 - 09:00	***Breakfast & Registration***	
	09:00 - 10:00	***TBD***	Surya Ganguli (Stanford University)
	10:00 - 11:00	***TBD***	Naftali Tishby (Hebrew University)
	11:00 - 12:00	***Contributed Speakers***	
	11:00 - 11:20	*NTK in ReLU Nets with Finite Depth and Width*	Boris Hanin (Texas A&M)
	11:20 - 11:40	*The Geometry of Sign Gradient Descent*	Lukas Balles (University of Tuebingen)
	11:40 - 12:00	*Neural Rendering Model: Rethinking Neural Networks from the Joint Generation and Prediction Perspective*	Tan Minh Nguyen (Rice University)
	12:00 - 13:30	***Lunch***	
	13:30 - 14:30	***Sparse Modelling of Data and its Relation to Deep Learning***	Michael Elad (Technion)
	14:30 - 15:30	***How Noise Affects the Hessian Spectrum in Overparameterized Neural Networks***	David Schwab (CUNY Center for Theoretical Sciences)
	15:30 - 16:30	***Towards an Understanding of Wide Neural Networks***	Yasaman Bahri (Google)
	16:30 - 16:45	***Closing Remarks***	Mikio Aoi (Princeton University)

Posters

Title	Authors
A Convex Lens for Non-Convex Problems	Benjamin D Haeffele (Johns Hopkins University)*; Rene Vidal (Johns Hopkins University, USA)
A Hessian Based Complexity Measure for Deep Networks	Hamid Javadi (Rice University)*; Randall Balestriero (Rice University); Richard Baraniuk (Rice University)
A Latent Variational Framework for Stochastic Optimization	Philippe Casgrain (University of Toronto)*
Asymptotic learning curves of kernel methods: empirical data and Teacher-Student paradigm	Stefano Spigler *; Mario Geiger (EPFL); Matthieu Wyart
Characterizing Inter-Layer Functional Mappings of Deep Learning Models	Megan R King (CCDC AvMC)*
Competitive Gradient Descent	Florian T Schaefer (Caltech)*; Animashree Anandkumar (Caltech)
Connecting Weighted Automata and Recurrent Neural Networks through Spectral Learning	Guillaume Rabusseau (Mila, Université de Montréal)*; Tianyu Li (McGill University); Doina Precup (McGill University)
Deep Neural Softmax Classifiers as Disordered Systems	Anthony Ndirango (Intel AI Lab)*
Disentangling feature and lazy learning in deep neural networks: an empirical study	Mario Geiger (EPFL)*; Stefano Spigler ; Arthur Jacot (EPFL); Matthieu Wyart
Efficient Deep Approximation of GMMs	Shirin Jalali (Nokia Bell Labs)*; Carl Nuzman (Nokia Bell Labs); Iraj Saniee (Nokia Bell Labs)
Explicitizing an Implicit Bias of the Frequency Principle in Two-layer Neural Networks	Yaoyu Zhang (New York University Abu Dhabi)*; Zhiqin John Xu (Shanghai Jiao Tong University); Tao Luo (Purdue University); Zheng Ma (Purdue University)
High-Dimensional Analysis of Learning in Two-Layer Models	Parthe Pandit (UCLA); Mojtaba Sahraee-Ardakan (UCLA); Phillip Schniter (Ohio State); Sundeep Rangan (NYU); Allie Fletcher *
Identifying weights of overcomplete shallow- and two-layer neural networks using few network evaluations	Timo Klock (Simula Research Lab)*; Massimo Fornasier (Technical University Munich); Michael Rauchensteiner (Technical University Munich)
Information geometry at initialization and beyond	Piotr Sokol (Stony Brook University)*; Il Park (Stony Brook University)
Input–Output Equivalence of Unitary and Contractive RNNs	Melikasadat Emami (University of California, Los Angeles)*; Mojtaba Sahraee-Ardakan (UCLA); Sundeep Rangan (NYU); Allie Fletcher
Limit Cycle Neural Networks Have Infinite Memory	Piotr Sokol (Stony Brook University)*; Ian D Jordan (Stony Brook University); Il Park (Stony Brook University)
Lower Bounds and Conditioning of Differentiable Games	Adam Ibrahim (Mila, Université de Montréal)*; Waïss Azizian (Mila, University of Montreal, Ecole Normale Supérieure de Paris); Gauthier Gidel (Mila, Université de Montréal); Ioannis Mitliagkas (Mila & University of Montreal)
Neural Spectrum and Gradient Similarity	Dmitry Kopitkov (Technion - Israel Institute of Technology)*; Vadim Indelman (Technion - Israel Institute of Technology)
Nondecomposable Data Dependent Regularizers offer Significant Performance Gains	Sathya Ravi (University of Wisconsin-Madison)*; Abhay Venkatesh (University of Wisconsin-Madison); Vikas Singh (University of Wisconsin-Madison USA)

On the Gap Between Theory and Practice in Deep Learning	Nick Dexter (Simon Fraser University)*; Ben Adcock (Simon Fraser University)
On the Identifiability of Representations in Supervised and Self-Supervised Learning	Geoffrey Roeder (Princeton University)*; Durk Kingma (Google Brain)
On the Regularization Properties of Structured Dropout	Ambar Pal (Johns Hopkins University)*; Connor T Lane (Johns Hopkins University); Benjamin D Haeffele (Johns Hopkins University); Rene Vidal (Johns Hopkins University, USA)
Optimal strategies for repairing neural networks in the brain	Guruprasad Raghavan (California Institute of Technology)*; Matt Thomson (California Institute of Technology)
PDE description of tree functions with repeated inputs	Roozbeh Farhoodi (University of Pennsylvania)*; Khashayar Filom (Northwestern University); Konrad Kording (Upenn)
Quantifying the abilities of quantum neural networks	Shiyuan Ma (Cornell University)*; Logan Wright (Cornell University); Peter McMahon (Cornell University)
Revisiting Matrix Factorization: On the Landscape and Implicit Bias of Gradient Flow	Hossein Valavi (Princeton University)*; Sulin Liu (Princeton University); Peter Ramadge (Princeton)
Sample Variance Decay in Kaiming-Initialized ReLU Networks	Kyle L Luther (Princeton University)*; H. Sebastian Seung (Princeton University)
Spline Subdivision in Deep Networks	Richard Baraniuk (Rice University); Randall Balestriero (Rice University)*
Stochastic Gradient Descent drives dimensionality reduction in neural networks	Matthew S Farrell (University of Washington)*; Stefano Recanatesi (University of Washington); Madhu Advani (Harvard University); Timothy Moore (University of Washington); Guillaume Lajoie (Université de Montréal, Mila); Eric Shea-Brown (University of Washington)
Tensorized State Spaces for Sequential Tensor Networks	Jacob E Miller (Mila, Université de Montréal)*; Guillaume Rabusseau (Mila, Université de Montréal)
The Collating Transform: Synthesizing the Scattering Transform and CNNs *The Effect of Whitening on Generalization*	David Weber (UC Davis)* Neha Wadia (University of California, Berkeley)*; Daniel Duckworth (Google); Jeffrey Pennington (Google Brain); Jascha Sohl-Dickstein (Google Brain)
The loss landscape of overparameterized neural networks	Yaim Cooper (Institute of Advanced Study)*
Understanding Generalization of Deep Neural Networks Trained with Noisy Labels	Dingli Yu (Princeton University)*; Wei Hu (Princeton University); Zhiyuan Li (Princeton University)
Variational Diffusion Autoencoders	Henry Li (UCSD)*; Ofir Lindenbaum (Yale); Xiuyuan Cheng (Duke University); Alexander Cloninger (University of California San Diego)

Recommendations for Food & Evening Activities

Food

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Joe's Pizza
1435 Broadway, New York, NY 1001

Los Tacos No.1
229 W 43rd St, New York, NY 10036

Xi'an Famous Foods
24 W 45th St, New York, NY 10036

Urbanspace Vanderbilt
230 Park Ave, New York, NY 10169

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Parker & Quinn
64 W 39th St, New York, NY 10018

Ootoya Times Square
141 W 41st St, New York, NY 10036

Burger & Lobster
132 W 43rd St, New York, NY 10036

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Benjamin Steakhouse
52 E 41st St, New York, NY 10017

The Bar Downstairs and Kitchen
485 5th Ave, New York, NY 10017

Drinks

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Cock & Bull
23 W 45th St, New York, NY 10036

$$$

Royalton Hotel
44 W 44th St, New York, NY 10036

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