# Jeffrey Cheng

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## Academics

**University of Pennsylvania**

**Jerome Fisher Program in Management and Technology (M&T)** ○ GPA: 3.86/4.00
Completed 3 degrees in 4 years: the dual-degree M&T program and a concurrent Master's in machine learning.

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|---|---|---|
| Penn Engineering | ○ Master of Science and Engineering in Data Science | ○ 2017-2019 |
| Penn Engineering | ○ Bachelor of Applied Science in Computer Science | ○ 2015-2019 |
| The Wharton School | ○ Bachelor of Science in Business Analytics | ○ 2015-2019 |

Graduated with high honors in the Eta Kappa Nu Honors Society (IEEE-HKN).

**Research**

**Augmenting Supervised Learning by Meta-learning Local Rules** ○ NeurIPS 2019 ○ OpenReview
Accepted to the NeurIPS Neuro-AI Workshop. Found the optimal local unsupervised learning rule by meta-learning on Hebbian updates and interpreted the results in context of neuroscience heuristics.

**AI Reasoning Systems: PAC and Applied Methods** ○ Whitepaper ○ arXiV
Survey on combining inductive logic and learning. Summarized findings from robust logics, knowledge infusion, ∂ILP, and DeepLogic. Created an integrated reasoning architecture.

**Bilingual is at Least Monolingual** ○ Whitepaper ○ arXiV
An algorithm that encodes monolingual priors from pre-trained language models that allows machine translation to be modeled by fixed-length architectures (e.g. feedforward networks).

## Work

**Palantir**
*2019*

**Machine Learning Specialist**, New York, NY
Consulted clients on integrating ML into operations-level decision-making using Palantir Foundry.
- Created a time-series modeling library integrating with Foundry ML; used across several industry verticals.
- Created a deep learning pipeline that improved a manufacturing client's demand forecasting by 5%.

**University of Pennsylvania**
*2019*

**Lecturer for CIS 700-004: Deep Learning**, Philadelphia, PA
Created and taught Penn's first graduate deep learning course, focusing on integrating inductive biases, optimization techniques, and state-of-the-art deep learning frameworks. See course materials at cis700dl.com.
- Lectured on neural net optimization, CNNs, autoencoders, RNNs, transformers, and meta-learning.
- Created homework assignments on neural net debugging, dog image recognition, and sarcasm detection.
- Supervised 13 deep learning projects, including a Kaggle winner and a SOTA question-answering engine.
- Currently the highest-rated ML course at Penn, by a margin of 11%.

**Internships**
2016-2018

| | | | |
|---|---|---|---|
| IBM Watson | ○ ML Engineer | ○ 2018 | ○ Made Watson Assistant understand time using biLSTMs. Sped up product deployment time from 6 months to 1 day. **Awarded grand prize** (best-in-class) from 243 intern projects. |
| Palantir | ○ Software Engineer | ○ 2017 | ○ Consulted in the healthcare space by deploying Palantir Foundry. Details classified. |
| EA Games | ○ Data Scientist | ○ 2016 | ○ Wrote matchmaking algorithm for *Plants vs. Zombies*. Created a stable-matching model based on skill and telemetry. Deployment in alpha release led to 12% increase in retention. |

## Selected Projects ○ Comprehensive project portfolio at jeffreyscheng.com

**Harmonica.ai** A state-of-the-art music composition AI that integrates inductive biases from musicology with deep learning models. Uses the physics of pitch to understand harmony before composing melody.

**Mewtagen** Autocomplete for Pokemon teams: recommends complementary movesets for incomplete teams. Optimizes via an evolutionary algorithm in Python. Winner of the 2017 UPenn CIS Fair.

## Skills

**Technical** General Programming (Java, Python) ○ Data (R, SQL, Spark) ○ Deep Learning (PyTorch, DEAP)

**Hobbies** I play saxophone and piano, read in the low-fantasy and classic mythology genres, paint in watercolor, and play competitive Pokemon via Smogon. Currently learning about indoor gardening and horticulture.