Robin Park

(Last updated June 2024)

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Education

- **Massachusetts Institute of Technology** — *Cambridge, MA*
  PhD in Mathematical Physics (incomplete, coursework only) — *2019 (deferred)*

  Relevant Coursework (Graduate):

  - 18.102 – Functional Analysis
  - 18.137 – Topics in Geometric PDEs
  - 18.155 – Differential Analysis
  - 18.177 – Topics in Stochastic Processes
  - 18.217 – Combinatorial Theory
  - 18.305 – Advanced Analytic Methods
  - 18.337 – Modern Numerical Computing
  - 18.338 – Random Matrix Theory
  - 18.435 – Quantum Computation

- **Massachusetts Institute of Technology** — *Cambridge, MA*
  BSc in Mathematics and Computer Science & Physics — *2016 – 2019*
- **Thomas Jefferson High School for Science & Technology** — *Alexandria, VA*
  Varsity Math Team, Linguistics Club — *2012 – 2016*

Experience

- **Stealth Startup** — *San Francisco, CA*
  Founder — *2023 – present*
  - Presently working on a stealth startup for the development of generative artificial intelligence.
- **Tavus** — *Houston, TX*
  Chief Technology Officer — *2021 – 2022*
  - Y Combinator S21 batch.
  - Led a team of engineers and oversaw the rebuilding of Tavus's tech stack.
  - Built new text-to-speech and video lip-sync engines for Tavus's personalized video outreach campaign.
- **Pillar** — *San Francisco, CA*
  Chief Technology Officer — *2019 – 2020*
  - Y Combinator S19 batch.
  - Managed a team of three engineers and implemented Agile workflows.
  - Designed and implemented Pillar's proprietary web-based data analytics software.
  - Maintained data pipelines and built deep learning models for social media sentiment analysis.
- **MIT Julia Lab** — *Cambridge, MA*
  Artificial Intelligence Researcher — *2018 – 2019*
  - Developed an efficiently trainable high-quality vocoder with limited data using Julia and Flux.jl.
  - Gave presentations on the viability of limited-data training methods for generative artificial intelligence models.
  - Was set to continue my doctoral studies under the Julia Lab, but ultimately decided to leave to work in the industry.
- **Facebook / Meta** — *Chicago, IL*
  Software Engineering Intern — *2018 – 2018*
  - Worked with Facebook's proprietary codebase to optimize the performance of backend services, implement new features for user interfaces, and enhance security protocols across the platform.
- **MIT Media Lab / Cortico** — *Cambridge, MA*
  Artificial Intelligence Researcher — *2017 – 2018*
  - Worked with Cortico's speech-to-text pipeline to develop systems that automatically identify entities in records of facilitated conversations.
- **MIT Computer Science and Artificial Intelligence Lab (CSAIL)** — *Cambridge, MA*
  Machine Learning Researcher — *2016 – 2017*
  - Developed an efficiently trainable high-quality vocoder with limited data using Julia and Flux.jl.
  - Continued my studies at the MIT Julia Lab (see above).

Projects

- **[Project name redacted for anonymity]** *2020 – present*
  - Text-to-speech tool that generates high-quality voices using multiple audio synthesis algorithms and customized deep neural networks trained on very little available data.
  - Demonstrated not only a significant reduction in the amount of audio required to realistically clone voices while retaining their affective prosodies, but also the feasibility of an on-demand, stable, and autonomously-improving speech synthesis application that aims to mimic a voice of limited availability.
  - At the time of its release (2020), was the most cutting-edge algorithm in the fields of voice cloning and speech synthesis. Outperforms Tacotron2, SV2TTS, TalkNet, etc. in terms of audio quality, data efficiency, inference speed, and naturalness and emotion preservation.
  - Project has its own Wikipedia article.

Teaching

- **Remote Tutoring** *San Francisco, CA*
  Independent Tutor *2023 – present*
  - Tutoring advanced high school/college level students (remote).
  - Mathematics (contest/Olympiad math, college level math, etc.), computer science (USACO Gold/Platinum and above, modern artificial intelligence, etc.), physics (USAPhO, college physics, etc.), linguistics (Olympiad)
  - Please send an email above for more info, rates, availability, etc.
- **6.037 – Structure and Interpretation of Computer Programs (MIT)** *Cambridge, MA*
  Teaching Assistant *2019 – 2019*
- **6.036 – Introduction to Machine Learning (MIT)** *Cambridge, MA*
  Teaching Assistant *2018 – 2019*

Articles

- *Chocolate numbers*. C. Ji, T. Khovanova, R. Park, A. Song. *Journal of Integer Sequences*, 2015, **19**, 16.1.7. (arXiv:1509.06093)
- *Combinatorial games of no strategy*. C. Ji, R. Park, A. Song. 2016. (PDF)
- *A quantum formulation of game theory*. R. Park. *MIT Physical Review*, 2019. (PDF)
- *Efficiently trainable high-quality vocoders with limited data*. R. Park, 2020.
- *On linguistic and phonetic quirks exhibited by autoregressive text-to-speech models*. R. Park. Unpublished, 2022.
- *A general method of recursive data augmentation in generative models*. R. Park. Unpublished, TBD.

Skills

- Deep learning, generative artificial intelligence, game theory, computational linguistics, natural language processing, quantum mechanics, quantum information, statistical analysis, frontend development, web design
- JavaScript/TypeScript, Python, Julia, Mathematica, R, LaTeX, C++

Selected Honors

- Received a perfect score on the **American Mathematics Contest 10 (AMC 10)** in 2014.
- 6-time qualifier for the **USA Mathematical Olympiad (USAMO)** from 2011 to 2016.
- Qualified for the **Mathematical Olympiad Summer Program (MOP)** in 2013.
- 4-time qualifier for the **USA Physics Olympiad (USAPhO)** from 2013 to 2016.
- Qualified for the **USA Computing Olympiad (USACO)** Platinum division in 2015.

Miscellaneous

- I was invited to represent the USA in the 2023 World Sudoku Championship, but had to decline due to scheduling conflicts.
- I've reached the highest level in competitive *Counter-Strike: Global Offensive* (FACEIT Level 10).
- I'm rated 2500 on Lichess and 2200 on chess.com in blitz and bullet chess.
- I'm a huge fan of *Dance Dance Revolution* and similar rhythm games. In 2018, I raised $7,000 to instate a public StepManiaX cabinet for MIT, which is still playable on campus today.
- I love playing blackjack and poker. I used to go to the Encore Boston Harbor casino almost every week while I lived in Cambridge.