

# Cenk Baykal

ML & QUANT RESEARCHER

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## EDUCATION

### Massachusetts Institute of Technology

Cambridge, MA

PH.D. IN COMPUTER SCIENCE (GPA: 5.00/5.00)

2017–2021

- Minor: Probability in High Dimension (Mathematics)
- Thesis: *Sampling-based Algorithms for Fast and Deployable AI*
- Advisor: Daniela Rus

### Massachusetts Institute of Technology

Cambridge, MA

S.M. IN COMPUTER SCIENCE (GPA: 4.91/5.00)

2015–2017

- Thesis: *Algorithms for Persistent Autonomy and Surveillance*
- Advisor: Daniela Rus

### University of North Carolina at Chapel Hill

Chapel Hill, NC

B.S. COMPUTER SCIENCE WITH HIGHEST HONORS, B.A. MATHEMATICS (GPA: 3.91/4.00)

2011–2015

- Graduated with Highest Distinction
- Thesis: *Design Optimization Algorithms for Concentric Tube Robots*
- Advisor: Ron Alterovitz

## EXPERIENCE

### Two Sigma

New York City, NY

QUANTITATIVE RESEARCHER

July 2024–Present

- Designed systematic alpha strategies that leverage alternative data sources and advanced machine learning techniques
- Built and maintained research tooling using agentic AI and LLMs to accelerate signal capture and forecast evaluation

### Google Research

Cambridge, MA

RESEARCH SCIENTIST

January 2022–June 2024

- Developed conditional computation algorithms for transformers that enabled up to **30%** speedups on Large Language Models (LLMs)
- Designed data-efficient knowledge distillation strategies that led to improved transformer architectures with only **50%** of teacher labeling cost
- Mentored scholars in Google CSRMP, supporting project design and research execution for students from historically marginalized groups
- Received the 2023 Google Research Tech Impact Award for leading “high-impact projects made sustainable by achieving tech excellence and great team dynamics”
- Received a Google Spot Bonus for “critical contributions to the efficiency of compact Gemini models”

### Massachusetts Institute of Technology

Cambridge, MA

POST-DOC

September 2021–January 2022

- Worked on algorithms for privacy-aware and efficient Machine Learning

### J.P. Morgan AI Research

New York City, NY

AI RESEARCH INTERN

May 2021–September 2021

- Developed sampling-based algorithms with regret guarantees for large-scale graph neural network training

### Massachusetts Institute of Technology

Cambridge, MA

TEACHING ASSISTANT FOR ADVANCED ALGORITHMS (6.854J / 18.415J)

Fall 2019

- Conducted office hours to help students on problem sets and concepts covered in lectures; designed and graded assignments
- TA rating according to the official MIT subject evaluation report: 7.0/7.0

## Microsoft, SAS Institute, University of North Carolina at Chapel Hill

Redmond, WA; Cary, NC;  
Chapel Hill, NC  
2012–2015

### EARLIER INDUSTRY & TEACHING EXPERIENCE

- Shipped SQL Server compression optimizations and analytics tooling deployed across academic and enterprise users
- Conducted research in robotics, path planning, and enabling technologies

## HONORS & AWARDS

2024	<b>Google Spot Bonus</b> , For critical contributions to the efficiency of compact Gemini models	Google
2023	<b>Google Research Tech Impact Award</b> , For contributions to ML efficiency techniques	Google
2023	<b>NeurIPS Spotlight Paper</b> , Alternating Updates for Efficient Transformers	NeurIPS
2021	<b>Winner</b> , MIT The Engine's Interval Program (one of two winning teams)	MIT
2020–2021	<b>Expert Reviewer</b> , ICLR (2020, 2021); ICML (2021)	Program Committees
2020	<b>Top 10% Reviewer</b> , NeurIPS	Program Committee
2017	<b>RSS Best Paper Award</b> , Robotics: Science and Systems Conference	RSS
2011–2015	<b>Early Academic Honors</b> , UNC distinctions including Carolina Research Scholar, CRA Outstanding Undergraduate Finalist, Phi Beta Kappa, SAS Charles H. Dunham Scholarship, Dunlevie Honors Award, Summer Undergraduate Research Fellowship, Honors Carolina, Dean's List	University of North Carolina at Chapel Hill

## SELECTED PUBLICATIONS

For the complete list of publications, visit [Google Scholar](#).

### TRANSFORMERS & DISTILLATION

#### Alternating Updates for Efficient Transformers

CENK BAYKAL, DYLAN CUTLER, NISHANTH DIKKALA, NIKHIL GHOSH, RINA PANIGRAHY, XIN WANG

NeurIPS (Spotlight)  
2023

#### SLaM: Student-Label Mixing for Distillation with Unlabeled Examples

VASILIS KONTONIS, FOTIS ILIOPOULOS, KHOA TRINH, CENK BAYKAL, GAURAV MENGHANI, ERIK VEE

NeurIPS  
2023

#### Robust Active Distillation

CENK BAYKAL, KHOA TRINH, FOTIS ILIOPOULOS, GAURAV MENGHANI, ERIK VEE

ICLR  
2023

#### A Theoretical View on Sparsely Activated Networks

CENK BAYKAL, NISHANTH DIKKALA, RINA PANIGRAHY, CYRUS RASHTCHIAN, XIN WANG

NeurIPS  
2022

### COMPRESSION & ROBOTICS

#### SiPPing Neural Networks: Sensitivity-informed Provable Pruning of Neural Networks

CENK BAYKAL\*, LUCAS LIEBENWEIN\*, IGOR GILITSCHENSKI, DAN FELDMAN, DANIELA RUS

SIAM SIMODS  
2022

#### Lost in Pruning: The Effects of Pruning Neural Networks beyond Test Accuracy

LUCAS LIEBENWEIN, CENK BAYKAL, BRANDON CARTER, DAVID GIFFORD, DANIELA RUS

MLSys  
2021

#### Provable Filter Pruning for Efficient Neural Networks

CENK BAYKAL\*, LUCAS LIEBENWEIN\*, HARRY LANG, DAN FELDMAN, DANIELA RUS

ICLR  
2020

#### Data-Dependent Coresets for Compressing Neural Networks with Applications to Generalization Bounds

CENK BAYKAL\*, LUCAS LIEBENWEIN\*, IGOR GILITSCHENSKI, DAN FELDMAN, DANIELA RUS

ICLR  
2019

#### Sampling-Based Approximation Algorithms for Reachability Analysis with Provable Guarantees

CENK BAYKAL\*, LUCAS LIEBENWEIN\*, IGOR GILITSCHENSKI, SERTAC KARAMAN, DANIELA RUS

Robotics: Science and Systems  
2018

#### Asymptotically Optimal Design of Piecewise Cylindrical Robots using Motion Planning

CENK BAYKAL, RON ALTEROVITZ

Robotics: Science and Systems (Best  
Paper Award)  
2017