A description of CS research opportunities for undergrads can be found by searching for ‘Harvard CS undergrad research’.

Research areas: Architecture; Artificial Intelligence (Computational Linguistics, Machine Learning, Multi-Agent Systems, Robotics); Computational and Data Science; Computational Neuroscience; Economics and Computation; Graphics, Vision and Interaction; Information and Society (Privacy and Security); Programming Languages; Systems, Networks and Databases; Theory of Communication; Theory of Computation

- Balanced Allocations and Double Hashing (Mitzenmacher)
- Using Prediction Markets to Estimate the Reproducibility of Scientific Research (Chen)
- Sparse Coding Trees with Application to Emotion Classification (Kung)
- Precise, Dynamic Information Flow for Database-Backed Applications (Chong)
- The Scalable Commutativity Rule: Designing Scalable Software for Multicore Processors (Kohler)
- An Interaction-Aware, Perceptual Model for Non-Linear Elastic Objects (Pfister)
- Bayesian Nonparametric Methods for Partially-Observable Reinforcement Learning (Doshi-Velez)
- Programmable Self-Assembly in a Thousand-Robot Swarm (Nagpal)

Sample Faculty Research and/or Publications

- Great Ideas in Computer Science (spring). An introduction to discoveries and paradigms of the field. Does not count for the concentration.
- CS 50: Introduction to Computer Science I (fall). Open to all, no prerequisites. Best to take this course freshman year, though it is possible to take it as a sophomore and still complete any of the concentration tracks.
- CS 51: Introduction to Computer Science II (spring). Abstraction and design in computation, usually taken after CS 50.
- CS 61: Systems Programming and Machine Organization (fall). For those who have the prerequisite C programming experience.
- CS 20: Discrete Mathematics for Computer Science (spring). An optional spring term course to prepare students for courses in theoretical computer science such as CS 121 and 124.
- CS 121: Introduction to the Theory of Computation (fall). For those who have the prerequisite background in formal mathematics.
- Computer Science ordinarily requires mathematics to the level of Mathematics 21a and 21b or equivalent. Students should follow Mathematics placement advice in judging where to start in the Mathematics sequence.

Sample Theses

- Piggybacking Robots: Overtrust in Human-Robot Security Dynamics
- Geometry in Algorithms and Complexity: Holographic Algorithms and Valiant’s Conjecture
- Not So Incognito: Exploiting Resource-Based Side Channels in JavaScript Engines

Sample Courses

- CS 124: Data Structures and Algorithms
- CS 136: Economics and Computation
- CS 143: Computer Networks
- CS 152: Programming Languages
- CS 161: Operating Systems
- CS 179: Design of Usable Interactive Systems
- CS 181: Machine Learning
- CS 189: Autonomous Robot Systems

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