

BRUCE

A new code submission system

The code submission problem

Every university Computer Science course uses a **code submission system** to run student-submitted code (e.g. homework assignments).

Most of these systems have three problems:

- Subpar security
- Poor scalability
- Different infrastructure across classes

The BRUCE API

BRUCE (BRUCE Runs Uploaded Code Easily) is an API for executing code that abstracts away and solves issues including security, scalability, language breadth, and server management.

BRUCE takes care of the messy security issues and scalability associated with code submission. It saves developers time and money by letting them focus on their specific use case instead of building a backend system.

BRUCE is implemented as a distributed cloud system; is optimized for scalability and speed; and includes documentation, client libraries, and sample applications.

Market and competition

Our initial target market is university and high school Computer Science classes. There are 4,140 universities in the US, most of which have Computer Science departments offering several CS classes. Eventually we plan on expanding to include programming contests and learn-to-code websites such as Codecademy and General Assembly.

Competitor: Coderpad

- Scratch pad for technical phone screens

- Problem: backend tied to one use case

Competitor: Continuous integration services

- Configurable build servers

- Problems: not real-time, too heavyweight

Competitor: Sphere Research

- Multipurpose code execution engine

- Problems: SOAP API, less accessible, restrictions

Development plan

Currently have a working infrastructure and frontend being used by CIS 197 (JavaScript) at Penn.

In the next 6 months, we plan to:

- Build **version 2.0** of our course and programming content submission infrastructure

- Deploy on multiple machines and do **load testing** to see if we can scale

- Develop and write formal **documentation** for our API

Costs:

- The only current cost of BRUCE is hosting on Amazon Web Services (AWS), which currently costs \$40/month, but as we scale it will go as high as \$300

The BRUCE team



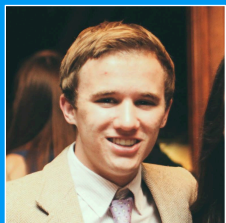
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