# Anne Bailey '22
## Internship at Cambly
### Winter 2021

This past winter, I used my Byrne Scholar funding to cover my living expenses while interning at Cambly, a language-learning startup. Cambly is a tutoring platform used around the world for learning English as a second language. Their web and mobile apps allow students, both children and adults, to complete English courses and video chat with tutors, who are all native English speakers. As a computer science major and linguistics minor, working as a software engineer intern at a language-learning company was a great intersection of my interests.

I worked on Cambly's Growth & Payments team, and I primarily worked on their backend and data flow for my various projects, although I also worked on their web and Android apps. After completing some smaller onboarding tasks, my first larger project was to build a web interface where company administrators could apply products (such as a certain amount of tutoring hours) to large groups of users at a time. This task was my first real introduction to Cambly's backend, as I worked through the flow of their purchase, charge, product, etc. data models and API endpoints to implement my own purchase logic.

My second project, which took up most of the internship, was designing and developing a system for sending marketing campaigns and company updates to large groups of users. I designed the data models and API endpoints for these messages, and integrated them with the third-party platform we were using to manage marketing messages and analytics. My biggest challenge with this project was designing different ways to handle very large loads of messages at once. I quickly learned that a method that worked for sending a message to four test users would clog up our servers when a message was sent to 50,000 users. I designed a new system using a serverless AWS Lambda function to receive incoming message and pass them on to our background workers. This system, however, overloaded the third-party marketing platform's API as we requested new information from them, so I worked on limiting our request rate to optimize the rate of messages we could save without overloading the third-party's servers. This project taught me a lot about developing scalable software, something I haven't been able to learn in the classroom.

Finally, I build frontend inboxes on Cambly's website and Android app for users to view the marketing message I'd worked on sending. I learned to use websockets for realtime updates and learned the Kotlin language for Android development. Overall, this internship taught me a lot about full-stack software engineering, and I had a great time.