CAREER PATHS IN COMPUTING

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Computing enabled me to . . .

Challenge Yourself by Reaching for the Highest Bar

NAME

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BACKGROUND

Born and raised in Miyagi, Japan

CURRENT JOB TITLE/EMPLOYER

CEO, Epistra Inc.

EDUCATION

**Ph.D. Systems Biology,
University of Keio**

a small startup, ecrebo,^a which provides a coupon-issuing system for retailers who seek to attract customers based on their individual purchasing habits.

I was responsible for developing a backend server for the coupon system. It had to be able to analyze the contents of the receipt, determine whether it met the conditions for issuing the coupon, and return it within three seconds, including communication time with the POS system. A fun challenge, right? Well, there was a catch: Marks & Spencer signed up for a trial to start in two months. With very limited time, I buckled down and developed a simple, fast system in a month by devising a new data structure for the coupons. That gave me another month for testing and refinement. To my relief, the system worked without any bugs, processing millions of transactions from the very first day.

I am proud to say ecrebo grew rapidly. In 2015, the *Financial Times*' list of fastest-growing companies ranked it 17th in U.K. and 83rd in Europe.^b The system I built is still in use today.

Ready for a new challenge, I turned my attention to starting my own company. I knew I wanted to help find solutions to critical problems facing society and to put my background in computational biology to use. I returned to Japan and found Epistra.^c My goal was to reduce the time and cost of research and development products involving life sciences. Typically, R&D for life-critical drugs can take more than 15 years and cost around \$480 million.

a <https://www.ecrebo.com/>

b <https://ig.ft.com/ft-1000/>

c A combination of epistemic, epic, and strag; <https://www.epistra.jp/>

For example, vaccines for many tropical diseases have been neglected in developing countries, where most citizens cannot afford them. Large pharmaceutical companies are reluctant to invest in the development of drugs when the financial return is dubious. For new, infectious diseases such as COVID-19, however, quick development of drugs for treatment and prevention is acute.

Epistra created a software to accelerate R&D processes in the life sciences using AI and robotics. Specifically, we specialize in the development of automatic optimization software and services for sample preparation, pre-treatment, and setting of measurement equipment. Our technical approach combines evaluating results using image recognition and experimental design using mathematical optimization, allowing us to reduce the number of trials and errors. Our team succeeded in improving the differentiation efficiency of induced pluripotent stem (iPS) cells into retinal pigment epithelium in a joint study with Dr. Masayo Takahashi, one of the pioneers in the field of human study of iPS cell-based therapy. Potential applications include therapies for heart disease and Parkinson's disease.

In this year's Extreme Tech Challenge,^d Epistra was selected one of the top 10 companies in Japan using technology to develop solutions to global challenges with sustainable development goals. I know this is only the beginning of my work, and I will continue to tackle difficult problems in the life sciences using cutting-edge technologies in biological and computer sciences. ■

d <https://re-how.net/product/398753/>

CHALLENGE YOURSELF AND reach for the highest bar. If you succeed, keep pushing the boundaries." This is what my friend Hassan Hajji advised when I started my career at IBM Research Tokyo in 2002, and these words have been a guiding force in my career ever since.

At IBM, I was challenged to learn as much as possible about the research process in an industrial lab (prototyping ideas, patenting, publishing results), and it dovetailed nicely with my desire to work toward a Ph.D. in systems biology.

After receiving my doctorate, which allowed me to enhance my skills in computational and mathematical analysis to understand complex biological systems, I was ready for a new challenge. I left Japan to work in the U.K. at