David Kim

My work experience has been driven by an interest in the intersection between computer science and medicine. My first job was at a non-profit organization disseminating specialist medical knowledge to doctors in rural areas, and I currently work at a drug discovery startup while volunteering at a medical imaging lab. While I believe there is vast room for innovation in medicine, I would like to grow my skills in computer vision, natural language processing, and data analysis in an academic setting. I have found technology typically plays second string in biotech, and therefore would like to spend the next few years becoming an expert in application, with the intent to build a future career to go back towards healthcare.

My interest in research started at Georgia Tech, when I delayed graduation to develop a cognitive presence classifier on student forum data. I extracted linguistic features using both licensed and free software (Linguistic Inquiry and Word Count and Tool for the Automatic Analysis of Text Cohesion) for a 90% micro recall and 82% macro recall. I found that I enjoyed working on open-ended problems. Reading papers, reviving old code to get performance with a basic random forest classifier that outperformed my classmate's transformer model was exciting as it was an exercise of both independent problem solving and intellectual freedom.

This led to volunteering at the Center for Virtual Imaging Trials lab at Duke university. Here I was tasked with developing small intestine models for virtual patients. While the project was initially proposed as an implementation of random walk algorithm, the scope naturally broadened to include developing an outer frame of a computerized tomography scan reconstruction through alpha-wrapping and conversion of the walk path into a 3D model using cubic splines. This led to my first conference submission, resulting in an oral talk at SPIE medical imaging.

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Finally, at my current biotech company, I volunteered to assist in publication efforts. I have trained and benchmarked internal drug discovery models against public methods. I have harmonized public and private data, run legacy libraries across old technology stacks, and replicated internal work across an electronic notebook catalog. Through this process, I have been familiarizing myself with the underpinnings of research, while working closely with doctorates. Listening to their thoughts on defining the critical path of an experiment and seeing them develop strong conclusions through meticulously designed charts has given me a desire to further improve my ability to think, communicate, and problem solve.

My objective at Columbia is to develop a robust framework for inquiry and problem solving while stepping into research. Learning-wise, I would like to build a foundation in applied mathematics through coursework in the stellar mathematics department. Business-wise, I am interested in exploring opportunities in entrepreneurship through Columbia's startup lab. Academically, I would like understand how to direct and execute research from the highly regarded faculty and explore the field of artificial intelligence with curious peers.

After graduation, I would like to use my academic training to continue research in either academia or industry. I would also like to spend 1-2 years founding a startup. I believe the medical field is ripe for technological disruption, and one promising area would the medical imaging industry. The American College of Radiology reports predict a deficit in diagnostic radiologists and an increase in cancer rates. Increasing market growth, promising clinical trials, and adoption of big players like Google and Nvidia suggest the space is primed for innovation.

However, I am open to exploration, as it is clear the labor market will undergo change due to integration of AI in everyday life. Large language models are now heading into abstract and higher skilled markets: law, creative writing, and software engineering. It is hard to predict

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where the priorities of industry, government, and society will be after graduation, but I know that

I will be well prepared to adapt and thrive in any environment with Columbia's stellar

instruction.