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Dear Hiring Manager,

I am writing to express my interest in the Software Engineer II position on the State Estimation team at Latitude AI. As a robotics software engineer with experience and interest in mobile autonomous systems, I was eager to apply after discovering this opportunity on the company's career website. Earlier this month, my team at PDW was dissolved due to shifting company priorities, and I am now seeking a new role in the mobile robotics space. I am confident that my technical skills, self-driven mindset, and career aspirations align well with this position, and I would cherish the opportunity to contribute to Latitude AI's mission.

Working on small start-up teams has required me to work on a wide breadth of autonomy algorithms, but I have specific experiences in deep learning, multi-object tracking, and state estimation that would help me in this role. In my most recent job at PDW, I evaluated stereo depth estimation DNNs like HITNet and Nvidia ESS DNN, optimizing them for Nvidia Jetson while varying file type, precision, input image size, and more. At the end of last year, I trained DNN feature extractor XFeat on a custom dataset, then reconfigured its class implementation to be compatible with training LightGlue, a feature matching network. These tasks provided me with experience in higher-level integration work and lower-level model modification and tuning.

At my prior position with Jugaad Labs, I used CenterTrack, an in-image tracking DNN, to do multi-object detection. I projected the network's bounding box output into 3D space to determine object position, which then became measurements for state estimation. In terms of Bayesian estimation, we used Kalman filters to smooth out predictions for each object's trajectory, allowing the system to more reliably identify risks and potential collisions. Additionally, during my Robotics MS, I implemented extended and unscented Kalman filters, particle filters, and CNNs. Having the opportunity to apply those learnings in practical work environment has further solidified my proficiency in the areas of state estimation and deep learning.

I gravitated to this role for its fit with my mobile robotics experience, but also because of my affinity for the company. My mom worked for Ford for 20 years, driving me to grade school in a 1996 Ford Windstar. Latitude AI is a subsidiary of Ford bringing ADAS technology to its vehicles, so I feel especially invested in its mission statement and success. Overall, I feel confident that I am a strong fit for this role and well-positioned to make positive contributions within it. I would love an opportunity to discuss the role and my qualifications further. Thank you for your consideration, and I look forward to hearing from you!

Best wishes,
Harrison Chen