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November 8, 2018

IHMC,

Robotics Lab

40 S Alcaniz Street,

Pensacola, Florida 32502

Dear Jerry, Peter, and those how may concern:

I am Ken, the software intern who worked on the stability analysis for the simple runners in this summer under the mentoring of Jerry, Robert, and Sylvain. Recently I am preparing my dissertation defense (scheduled in early Dec), so I am also looking for possible part time/full time positions. This job opportunity of legged robot control engineer found from the website immediately gets my attention, not only because it is closely related to my research – bipedal robot walking control, but also because I think I learned a lot from the internship. It is also inspiring to work on the challenging topic like fast-runner analysis. As a result, I think it would be exciting and stimulating to get involved in the robotics lab.

I have six years of experiences working on bipedal. My PhD studies mainly focus on the trajectory optimization algorithms for hybrid systems. I also have the experience of designing a QP-based controller which unifies COM planning and the QP-based torque control for the bipedal walking with ZMP constraints. On the other hand, I gained lots of hands-on experiences in my master’s studies when I participated to design and build a bipedal mechanism for a human-sized humanoid, and develop its electronic system, which requires lots of testing between hardware, firmware and software. During my internships at IHMC robotics lab and MathWorks robotics team, both helped me to gain more experiences about communication, software development like clean code, unit test, and code conventions.

It is intriguing to understand why human is capable of performing complex, agile and robust multi-contact motions with such a complex system while the actuators’ precision and the hardware bandwidth are so limited; therefore I want to understand it more from the legged robot’s perspective. For legged robots, it is challenging to find a model with proper complexity (or a proper low-dimensional space) for fast and robust reactions while the full dynamics can still be exploited at the same time. This also makes it interesting and worth to be investigated.

I am confident that my research/work experiences and skills make me a good candidate for this opportunity. I have attached my resume and I look forward to speaking with you about my qualification. Thank you for your consideration.

Sincerely,

Kenneth Chao YouTube Video Link

  Cover letter in pdf format. Name your file: “YourLastName\_CoverLetter.pdf”. In the cover letter:

▪     Provide link (URL) to your YouTube video.

▪     One to two page essay describing why you want to be a developer of control algorithms for legged robots, what makes you qualified, and what you see as the major challenges to achieving legged robots that are as capable as their biological counterparts.