August 24, 2016

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Mr. Jerry Pratt
Jerry Pratt
Institute for Human and Machine Cognition
40 South Alcaniz Street
Pensacola, FLORIDA 32502

Dear Mr. Pratt,

I am currently a french PhD student in LAAS-CNRS working on advanced walking strategies for humanoid robots. My defense will take place the 28^{th} of September and I am looking for a Post-Doc position for about two years. From your web site, it is said that you occasionally look to fill position such as Post-Doc in Humanoid Walking Control and I am willing to apply as such.

It would be a fantastic ~~experiment~~ to work with you on generalized locomotion for humanoid robots. A core topic of my PhD thesis was to use linear and nonlinear optimization methods for generating in real time walking motion trajectories. In addition to that I was in charge of deploying those algorithms on the HRP-2 humanoid robot. In the framework of the European Project KoroiBot I ~~was in~~ fruitful collaborations with the University of Heidelberg. We worked on the python and C++ implementation of a real time walking pattern generator able to handle nonlinear constraints. It optimizes simultaneously the position and orientation of the foot and an extension of it would be to use mixed integer solvers as in **[1]**. We also worked on generalized locomotion with multiple non coplanar contacts. With specialists in human motion from the Weizmann Institute of Science and the University of Tuebingen we used properties extracted from human motions to generate robust and versatile locomotion. Another field of research that I would like to tackle is the proper generation of 3D trajectory generation for end effectors. Following the work of **[2]** a stochastic exploration of the dynamically reachable regions for end-effector would help to design a generalized locomotion pattern generator with automatic 3D end effector trajectories. Furthermore I really would love to work on the Valkyrie humanoid robot. I also heard about your efficient programming policy and I would like to learn from it.

~~I am currently in France but please feel free to contact me by email or Skype if you have any questions~~.

My under review manuscript : `https://cloud.laas.fr/index.php/s/ioSMVXlONWJg3v2`
My personal web page : `http://projects.laas.fr/gepetto/index.php/Members/MaximilienNaveau`

[1] R. Deits and R. Tedrake, "Footstep planning on uneven terrain with mixed-integer convex optimization," in *Int. Conf. on Humanoid Robotics*, 2014
[2] A. Herdt, H. Diedam, P.-B. Wieber, *et al.*, "Online walking motion generation with automatic footstep placement," 2010

Sincerely yours,

Maximilien Naveau