Steve Tonneau

Post Doctorate - Software Engineer
Computer Graphics and Robotics

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Keywords

Motion planning and synthesis, optimal control, humanoid robotics, procedural animation

Fundings and awards

Digital Technology Grand Prize (ANR Entracte).
Royal Society International Exchanges Award.

Research experience

(Upcoming) December 2017 - March 2018

The University of Edinburgh, Scotland

Post-Doctorate in mobility – Royal Society International Exchanges Award

Long stay in Edinburg. On this new project, we will work on deep learning methods and their applications for motion synthesis in both robotics and computer graphics.

Since March 2015

LAAS-CNRS, Toulouse, France

Post-Doctorate – national project Entracte (ANR)

The objective of the post-doc is to adapt the multi contact planning methods I developed during my PhD from Computer animation to anthropomorphic robots such as HRP-2. This implies developping skills regarding optimization and optimal control methods, in collaboration with Nicolas Mansard and Andrea Del Prete. In parallel, I pursue my Computer Graphics activity by coordinating a new collaboration between LAAS and The University of Edinburgh on online synthesis of contact rich motions in dynamic environments with Prof. Taku Komura.

December 2011 - February 2015

IRISA, Rennes, France

Phd

Autonomous locomotion for virtual characters in constrained environments. This thesis objective is to improve the motion autonomy of 3d characters in applications such as videogames. We therefore propose new methods and heuristics to generate the animations that allow them to interact with complex environments in a believable manner (car outgress, climbing tasks...).

Since December 2011

INSA Rennes, Supaero Toulouse, AIP Toulouse, France

Teachings

– humanoid robotics[1]: motion planning and control
– Supervising of student projects on Virtual Reality;
– Functional programming (Scheme);
– Databases;
– Objective Caml programming language.

[1] with my own class material

Supervision

Pierre Fernbach	PhD student
Raphaël Lefèvre	Intern
Anna Seppäla	Software engineer

Engineer experience (3.5 Years)

July 2008 – October 2011

Masa Group, Paris, France

Software Engineer then Project Manager

Brain project : AI middleware for serious games.
– Knowledge base designer;
– Maintenance on the decisional engine;
– Behavior libraries design for various demonstrations.
Form project : AI-driven animation for 3d characters using the MasaLife AI middleware (now craftai). Integration with Morpheme animation framework and AI.implant pathfinding solution within technical demonstrations.

Education

2005 – 2008 **Master in Computer science**
INSA Engineering school
Rennes, France

2005 – 2008 **"Game design and Development" Master classes**
Abroad semester at RIT
Rochester, USA

2003 – 2005 **2 year diploma on Mathematics**
University of Montpellier II
Montpellier, France

Computer science skills

Engines and software	Blender, Unity 3d, Morpheme, ODE, Bullet
Languages	C++, Python, Java, C#, Prolog, Lua, Scheme, O-Caml
Data	PostgreSQL, PostGIS
Version control	GIT, SVN

Workshops

IROS '16

Towards a unified workflow for multi contact motion on legged robots: Challenges in planning, optimization and control

Tonneau, Bretl, Mansard

Main organizer of the workshop (link).

reviewer

Regular reviewer for CGF, T-RO, MIG, ICRA and IROS.

Conference Publications

IROS '17

A Kinodynamic steering-method for legged multi-contact locomotion

Fernbach (my PhD student), Tonneau, Mansard, Park, Manocha, Multon, Pettré

MIG '16

Ballistic motion planning for jumping superheroes

Campana, Fernbach, Tonneau, Taïx, Laumond

IROS '16

HPP: a new software for constrained motion planning

Mirabel, Tonneau, Fernbach, Seppäla, Campana, Mansard, Lamiraux

ICRA '16

Fast Algorithms to Test Robust Static Equilibrium for Legged Robots

Del Prete, Tonneau, Mansard

ICRA '16

A versatile and efficient pattern generator for generalized legged locomotion

Carpentier, Tonneau, Naveau, Stasse, Mansard

ISRR '15

A Reachability-based planner for sequences of acyclic contacts in cluttered environments

Tonneau, Mansard, Park, Manocha, Multon, Pettré

Graphics interface '14

Task efficient contact configurations for arbitrary virtual creatures

Tonneau, Pettré et Multon

Journal Publications

Submitted to TOG

2PAC: Two Point Attractors for Center of Mass Trajectories in Multi Contact Scenarios

Tonneau, Del Prete, Pettré, Mansard

Submitted to T-RO

An efficient acyclic contact planner for multiped robots

Tonneau, Del Prete, Pettré, Park, Manocha, Mansard

Conditionally accepted to T-RO

Zero Step Capturability for Legged Robots in Multi Contact

Del Prete, Tonneau, Mansard

Computer Graphics Forum (Eurographics '16)

Character contact re-positioning under large environment deformation

Tonneau, Al-Ashqar, Pettré, Komura, Mansard

Computers & Graphics vol 45

Using task efficient contact configurations to animate creatures in arbitrary environments

Tonneau, Pettré, Multon