Fully funded PhD Position
on
Sketch-based content creation
at
LTCI - Telecom Paris
Institut Polytechnique de Paris

April 15, 2024

I am looking for highly motivated students interested in pursuing a PhD (possibly starting with an internship) in sketch-based modeling. The internship/PhD is part of the SketchMAD project funded by the French National Research Agency (ANR).

Advisor: Dr Amal Dev PARAKKAT (IMAGES Team, LTCI - Telecom Paris, Institut Polytechnique de Paris)

Contact: amal.parakkat@telecom-paris.fr

Place: LTCI - Telecom Paris, Institut Polytechnique de Paris, Palaiseau, France

Contract duration: 36 months, starting in the Fall of 2024 (possibility of starting with an internship)

Preferred Application Date: 31st May 2024

Context

Humans are not perfect; neither are computers. So, in many cases, the best solution would be to develop a complementary relationship between them by using human inputs to guide the computer. In the context of Computer Graphics and Digital Geometry Processing, this kind of relationship between artists and computers can do wonders. For example, it allows both expert artists and novice users to create/edit/manipulate/refine complex shapes/tasks with minimal annotations/inputs in a playful and enjoyable manner.

In general, interactivity assists novices and experts alike in expressing their thoughts and imagination. Using sketching as a medium to facilitate this interaction has received a lot of attention due to its intuitive nature (all of us enjoy sketching, irrespective of how it ends up). Moreover, interactive content creation using hand-drawn or digitally created sketches provides an engaging and interactive digital experience to the user, irrespective of their expertise.

Please have a look at these technical works to get a flavour of sketch-based interfaces:
- 3-Sweep: Extracting Editable Objects from a Single Photo - Paper, Video
- Autocomplete hand-drawn animations - Paper, Video
- AniMesh: Interleaved Animation, Modeling, and Editing - Paper, Video
- Structured Annotations for 2D-to-3D Modeling - Paper, Video
- Motion Amplifiers: Sketching Dynamic Illustrations - Paper, Video
- Energy Brushes: Interactive Tools for Illustrating Stylized Elemental Dynamics - Paper,Video
- Monster Mash: A Single-View Approach to Casual 3D Modeling and Animation - Paper, Video
- Painting by Feature: Texture Boundaries for Example-based Image Creation - Paper, Video
- DeepFaceDrawing: Deep Generation of Face Images from Sketches - Paper, Video
- SurfaceBrush: From Virtual Reality Drawings to Manifold Surfaces - Paper, Video

Objective

From a user's/artist's perspective, spending too much time interacting with a computer is not ideal. So, representing the shape in an easily modifiable/editable abstract representation possesses a high advantage. On the contrary, because of the rich available visual information, viewers/end-users prefer a detailed shape for improved realism. So, having an interface to switch back and forth between an abstract shape and a detailed shape is necessary throughout the modelling process. Rather than relying on an automatic algorithm as in literature, in this study, the main focus will be to develop new sketch-based interfaces to facilitate this conversion. To be precise, the main investigation will be on developing new paradigms, methodologies and algorithms to incorporate human perception (through sketching - making it accessible for everyone irrespective of expertise) to aid shape modelling and manipulation.

Context of the position

The successful candidate will be hired by Telecom Paris, Institut Polytechnique de Paris, and will be joining the IMAGES research team at LTCI (Laboratoire Traitement et Communication de l'Information) and will be working closely with VISTA and GeomeriX teams. We offer a high-standard research environment (including facilities and equipment) within the vibrant academic and industrial environment of Institut Polytechnique de Paris.

The student hired for this PhD will benefit from the ANR funding dedicated to this project to develop his/her research. The successful candidate will have opportunities to work with leading researchers in the field from all over the world. Also, they are expected to present their work at International conferences with all travel expenses covered by the project.

Requirements and application

Potential applicants should be:
- About to graduate (or recently graduated) with a Master's degree in Computer Science with strong foundations in mathematics
- Skilled in programming: Especially C++ and/or Python
- Relevant good background in Computer Graphics such as 3D modeling, 3D Animation, and Geometry Processing. Please detail this background in your application.

Please send your application to Amal Dev PARAKKAT (amal.parakkat@telecom-paris.fr) with:
- Curriculum Vitae (please state clearly your diplomas and field of study, previous experiences/internships and current position)
- Motivation Letter
- Copy of your Bachelor and Master transcripts
- At least two recommendation letters or alternatively contacts of referents who know you, and work in Computer Graphics or related fields

If you would like any further information regarding this position, please email at: adparakkat@gmail.com or amal.parakkat@telecom-paris.fr

References

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