

Anderson MACIEL, Ph.D. in Computer Science

Birth date: Jan 22nd 1977.

Brazilian and Italian citizenships

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OBJECTIVES

To be part of a dynamic team where I can use my experience in research to develop the best solutions for challenging problems and effective teaching projects in Computer Graphics and Computer Science in general.
To develop research in my area of expertise and in integration with other domains of local and global interest.
To collaborate in a fertile environment that stimulates creativity and knowledge enrichment.

EDUCATION

- 2001 - 2005** | **Doctoral studies** in Computer Graphics at the Virtual Reality Lab (VRLab), Swiss Federal Institute of Technology (EPFL), Lausanne (Switzerland).
Ph.D. Thesis: *"A Biomechanics-based Articulation Model for Medical Applications"*. Direction: Daniel Thalmann. (accepted in November 2005).
Postgraduate in Virtual Reality and Multimodal Interaction: *"Deformable Tissue Parameterized by Properties of Real Biological Tissue"*. Supervisor: Ronan Boulic; Direction: Daniel Thalmann. (finished in 2002)
- 1999- 2001** | **M.Sc. studies** in Computer Science at the Federal University of Rio Grande do Sul, Porto Alegre (Brazil).
M.Sc. Thesis: *"Anatomy-based Articulation Model for Virtual Humans"*. Supervisor: Carla M. D. S. Freitas. (in Portuguese)
Individual work: *"A Study of Behavior Modeling for Computer Animation"*. Supervisor: Anatólio Laschuk. (in Portuguese)
- 1994-1998** | **Undergraduate studies** in Computer Science at the University of Caxias do Sul (Brazil).
Diploma project: *"Collision Detection between Rigid Polyhedra Pairs Applied to Asimov Project"*. Supervisor: Ricardo Vargas Dorneles. (in Portuguese)

PROFESSIONAL EXPERIENCE

- 2007 - today** | **Postdoctoral Invited Researcher** at the Informatics Institute of the Federal University of Rio Grande do Sul (UFRGS)
Grant PDJ program from CNPq.
Research work on biomechanical modeling and deformation of biological tissues for surgery simulation. Development of real-time applications with 3D graphic and haptic feedback.

- 2006 - 2007** | **Postdoctoral Research Associate** at the Mechanical, Aerospace and Nuclear Engineering department of the Rensselaer Polytechnic Institute (RPI), Troy, NY (USA).
Grant R01EB005807-01 from the National Institute Of Health (NIH) in cooperation with the Harvard Medical School, in surgery simulation.
Research work on biomechanical modeling and deformation of biological tissues for laparoscopic surgery simulation. Development of real-time applications with 3D graphic and haptic feedback.
Contributor of the Physically Realistic Virtual Surgery project developing new techniques to allow for real time simulation of minimally invasive surgery.
- 2001 - 2005** | **Research Assistant (VRlab – EPFL)**
- **Research work** on biomechanical modeling and deformation of biological tissues for applications in the fields of Computer Graphics and Medical Informatics. Development in C++ / VTK / Qt / OpenGL. Also work on haptic interfaces with force feedback and soft tissues.
 - **Contributor to the NCCR CO-ME:** Computer Aided and Image Guided Medical Interventions – working on soft tissues models for a functional model of the human hip joint for medical applications.
 - **Teaching duty** for the course on Computer Graphics for undergraduate students and Advanced Computer Graphics for graduate students.
 - **Supervision of semester projects and master projects.**
- 1999- 2001** | **Research assistant (scholarship by CAPES) UFRGS (Brazil)**
- Working in the Virtual Patients (VPat) project on anatomical joints modeling.
 - Also worked on XML protocols for remote configuration of network hardware devices.
- 1998- 1999** | **Software engineer in private companies**
- Enterprise management software development at N&L Informática Ltd.
 - Home-banking system for HSBC as a free-lancer at EverSystems.
 - Web *Java* development and *Java* programming language training for third party companies at Javabr Ltd. (company I was co-founder)
- 1995- 1998** | **Research assistant (scholarship by CNPq) UCS (Brazil)**
- Working in the ASIMOV project on 3D visualization and collision detection for CAD and simulation of mechanical manipulators.

TECHNICAL PROFICIENCY

Languages	C/C++, Java, Pascal, Delphi, Basic, SQL, HTML, LaTeX, UML
API	VTK, QT, Inventor, OpenGL, GLSL, XML, J2EE, AR toolkit
Others	Linux, Solaris, Windows, 3D Studio Max

PUBLICATIONS

- 2008** | A. Maciel, S. De. **An Efficient Dynamic Point Algorithm for Line-based Collision Detection in Real Time Virtual Environments Involving Haptics.** *Computer Animation and Virtual Worlds*, 2008. John Wiley & Sons, Ltd. (to appear)
- A. Maciel, Y. Liu, W. Ahn, T. P. Singh, W. Dunnican, S. De. **Development of the VBLaST(TM): A Virtual Basic Laparoscopic Skill Trainer.** *International Journal of Medical Robotics and Computer Assisted Surgery*, 2008. John Wiley & Sons, Ltd. (to appear)

- A. Maciel, S. De. **A New Line-based Algorithm for Real Time Haptic Interactions with Virtual Environments.** In *Proceedings of the Symposium on Haptic interfaces For Virtual Environment and Teleoperator Systems (Haptics'08)* (March 13 - 14, 2008). HAPTICS. IEEE Computer Society, Reno, NV. (to appear)
- A. Maciel, S. De. **An Efficient Dynamic Point Algorithm for Line-based Collision Detection in Real Time Virtual Environments Involving Haptics.** In: *Studies in Health Technology and Informatics: Medicine Meets Virtual Reality 16 - parallel, combinatorial, convergent: NextMed by Design.* 2008; 132: 266-271. Westwood, J.D., et al. (eds.). IOS Press, Amsterdam (2008).
- A. Maciel, Y. Liu, W. Ahn, T. P. Singh, W. Dunnican, S. De. **Towards a Virtual Basic Laparoscopic Skill Trainer (VBLaST).** In: *Studies in Health Technology and Informatics: Medicine Meets Virtual Reality 16 - parallel, combinatorial, convergent: NextMed by Design.* 2008; 132: 275-280. Westwood, J.D., et al. (eds.). IOS Press, Amsterdam (2008).
- A. Maciel, S. De. **Physics-based Real Time Laparoscopic Electrosurgery Simulation.** *Studies in Health Technology and Informatics: Medicine Meets Virtual Reality 16 - parallel, combinatorial, convergent: NextMed by Design.* 2008; 132: 272-274. Westwood, J.D., et al. (eds.). IOS Press, Amsterdam (2008).
- 2007** A. Maciel, R. Boulic, D. Thalmann, D. **Efficient Collision Detection within Deforming Spherical Sliding Contact.** *IEEE Transactions on Visualization and Computer Graphics*, vol. 13, no. 3, pp. 518-529, May/June, 2007.
- 2005** A. Maciel, S. Sarni, R. Boulic, D. Thalmann, D. **Stress Distribution Visualization on Pre- and Post-Operative Virtual Hip Joint** In. *Computer Aided Orthopedic Surgery 2005*, Helsinki, Finland. CAOS – Pro Business, pp. 298-301.
- S. Sarni, A. Maciel, R. Boulic, D. Thalmann. **Spreadsheet Framework for Visual Exploration of Biomedical Datasets** In. *IEEE CBMS 2005*, Dublin, Ireland. IEEE Computer Society, pp. 159-164.
- M. B. Villamil, L. P. Nedel, C. M. D. S. Freitas, A. Maciel. **A Model to Simulate the Mastication Motion at the Temporomandibular Joint** In. *SPIE International Symposium Medical Imaging 2005*, San Diego CA. *Proceedings of SPIE*, pp. 303-313.
- 2004** A. Maciel, S. Sarni, O. Buchwalder, R. Boulic, D. Thalmann. **Multi-Finger Haptic Rendering of Deformable Objects** In. *Eurographics Symposium on Virtual Environments (In Cooperation with ACM Siggraph)*, 2004, Grenoble, France.
- S. Sarni, A. Maciel, R. Boulic, D. Thalmann. **Evaluation and Visualization of Stress and Strain on Soft Biological Tissues in Contact** In. *International Conference on Shape Modeling and Applications*, 2004, Genova, Italy. IEEE Computer Society Press.
- 2003** A. Maciel, R. Boulic, D. Thalmann. **Towards a Parameterization Method for Virtual Soft Tissues Based on Properties of Biological Tissue** In. *5th IFAC 2003 Symposium on Modelling and Control in Biomedical Systems*, Melbourne, Australia. Elsevier Ltd.
- A. Maciel, R. Boulic, D. Thalmann. **Deformable Tissue Parameterized by Properties of Real Biological Tissue** In. *IS4TM*, 2003, Juan-les-Pins, France. *Lecture Notes in Computer Science: Surgery Simulation and Soft Tissue Modeling*, Springer-Verlag.
- C. M. D. S. Freitas, L. P. Nedel, I. H. Manssour, J. K. Gavião, A. Maciel, T. P. Correa. **Framework para Construção de Pacientes Virtuais: Uma Aplicação em Laparoscopia Virtual.** In: *Proceedings of SVR 2003 - VI Symposium on Virtual Reality*, Ribeirão Preto, Brazil. SBC - Brazilian Computer Society, 2003. v. 1, pp. 283-296.
- 2002** A. Maciel, L. P. Nedel, C. M. D. S. Freitas. **Anatomy-Based Joint Models for Virtual Human Skeletons** In. *Computer Animation 2002*, Geneva, Switzerland. IEEE Computer Society, pp. 220-224.
- J. A. Torres, A. Maciel, L. P. Nedel. **Uma Arquitetura para Animação de Humanos Virtuais**

com Raciocínio Cognitivo. In: Anais do V Simpósio de Realidade Virtual. Fortaleza, Brazil. Brazilian Computer Society, 2002.

2001 R. B. Martins, A. Maciel, L. P. Nedel. **SkelMod-3D: Um Sistema Livre e Multiplataforma para Modelagem e Visualização de Corpos Articulados.** In: Anais do II Workshop sobre Software Livre. Porto Alegre, Brazil. CORAG Companhia Rio-Grandense de Artes Gráficas, 2001. p. 21-24.

1999 A. Maciel, G. A. Assis, R. V. Dorneles. **ASIMOV - Educational Framework for the Modeling, Programming and Simulation of Mechanical Manipulators.** In: EUROPEAN SIMULATION MULTICONFERENCE, 1999, Warsaw. Modelling and Simulation: A Tool for the Next Millennium. Erlangen: SCS Publishing House, 1999. v. I, p. 339-343.

A. Maciel, G. A. Assis, R. V. Dorneles. **Modelagem, Visualização e Simulação de Manipuladores Mecânicos.** In: CLEI 1999: Conferencia Latinoamericana de Informatica. Assuncion, 1999.

PERSONAL

Languages Fluent in Portuguese (mother tongue), English and French. Good knowledge of Italian, basic knowledge of Spanish.

Prizes Honorable Mention Standing 1997 ACM South American Collegiate Programming Contest (**22nd ACM International Collegiate Programming Contest**)

References

Dr. Daniel Thalmann, Professor
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