

cfaed Seminar Series

DATE: 30 May 2017
TIME: 10.00 am
LOCATION: TU Dresden, Georg-Schumann-Str. 7a, Room 204

GUEST SPEAKERS:

Prof. Sebastian Isaza

Prof. Ricardo Andrés Velásquez

Electronics Engineering, University of Antioquia, Colombia

TITLE:

“Tackling the computational challenges of DNA data compression and computer architecture simulation”

Abstract:

After introducing the University of Antioquia and the SISTEMIC lab, we will present our research on high performance computing. The exponential growth of DNA data is forcing many scientist to throw away data they cannot afford to store, which in turn, has triggered the development of DNA-specific compression algorithms. However, as data continues to grow, new efforts to improve compression ratios at an affordable computing cost need to be developed. We will talk about the aforementioned challenges and present the compression algorithm we are developing.

Lastly, we will discuss the problem of simulation speed in computer architecture and how combining domain specific languages and GPUs can contribute to faster simulations. Computer architecture research makes extensive use of simulation, however, architectural simulators are slower with every new computer generation. Even though new parallel architectures such as GPUs could contribute to faster simulators, their programming complexity is an obstacle for its widespread adoption. We will discuss how domain specific languages can help overcome this limitation

Bios:

Sebastian Isaza received his BSc. diploma in Electronics Engineering in 2004 from the University of Antioquia, Colombia. He then graduated from the MSc. in Embedded Systems Design program and the University of Lugano, Switzerland. Afterwards, he pursued his PhD. studies in Computer Engineering at Delft University of Technology, the Netherlands, where he graduated in 2011. He spent a year as a postdoctoral researcher at the Department of Neuroscience of the Erasmus Medical Center working on computational neuroscience. Since 2013, he is an assistant professor at the Department of Electronics Engineering of the University of Antioquia, Colombia, where he teaches programming and computer architecture. He is part of the SISTEMIC research lab where he leads graduate and undergraduate students working on high performance computing applied to bioinformatics and neuroscience. He is currently the Electrical and Electronics Engineering Editor of the School of Engineering journal (Revista Facultad de Ingeniería).

Ricardo Andrés Velásquez received his BSc. diploma in Electronics Engineering in 2005 from the University of Antioquia, Colombia. He graduated in 2009 from the MSc. in Embedded Systems Design program at the University of Lugano, Switzerland. Afterwards, he pursued his PhD. studies in Informatics at the University of Rennes 1, France, where he graduated in 2013. From 2013 to 2015, he was assistant professor at the Department of Electronics Engineering of the Metropolitan Institute of Technology, Colombia. Since 2015, he is an assistant professor at the Department of Electronics Engineering of the University of Antioquia, Colombia. Ricardo's research interests cover the development of new programming paradigms for modern parallel execution platforms.