Bedrich Benes, Ph.D.

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- Title and abstract (informative but short: 5 – 10 lines);
  Inverse Procedural Modeling in Geometric Modeling

This course presents state-of-the-art approaches for modeling and editing of 3D models for virtual worlds, simulations, and entertainment, in addition to real-world applications. We first review inverse procedural modeling (IPM) (i.e., proceduralization of provided 3D content). We then describe different formulations of the problem as well as solutions based on those formulations. We show that although the IPM framework seems under-constrained, the state-of-the-art solutions use simple analogies to convert the problem into a set of fundamental computer science problems, which are then solved by corresponding algorithms or optimizations. We then describe and categorize the results and applications of the IPM frameworks.

- Outline of the topics to be presented, with a short comment on each topic;

  See above.

- A description of the target audience and pre-requisites expected from participants;

  General audience. Required basic knowledge of algebra an geometry.

- A brief CV of the speaker indicating his/her background in the tutorial area;

  Bedrich Benes is a George W. McNelly professor of Technology and professor of Computer Science at Purdue University. Dr. Benes works in generative methods for geometry synthesis, and his main focus is in procedural, inverse procedural modeling, and simulation of natural phenomena. He has published over 160 research papers, including 17 papers in Siggraph and Siggraph Asia. His work has been sponsored by the National Science Foundation (8x), NASA, FFAR, Adobe Research, Intel, Siemens, Samsung, Department of Energy, and Ford Inc., among others. He is the editor in chief of Computer Graphics Forum, and he was a papers chair of Eurographics 2017. He is an associate editor of in Silico Plants (Oxford Academic), Computers & Graphics (Elsevier), Computer Animation and Virtual Worlds (Wiley), and IEEE Computer Graphics Applications. Bedrich is a Purdue University faculty scholar and a director of the High Performance Computer Graphics Laboratory. Bedrich worked at Tec de Monterrey from 1990 to 2005.

- Technical requirements (equipment, hardware, and software).

  None