

Second Laureate Applied Research

- **Research Work Title:** Robotic Construction on Earth and Beyond
- **Researcher:** Prof. Behrokh Khoshnevis
- **Country of Residence:** USA
- **Scientific Affiliation:** Member of European Union Academy of Sciences, Fellow of National Academy of Inventors, Fellow of the Society for Computer Simulation, Fellow of the Industrial Engineering Society



Abstract:

The nature of construction has remained intensely manual throughout recorded history. Unlike in manufacturing, the growth of automation in construction has been slow. A promising new automation approach is the Contour Crafting (CC) technology which has been invented by Professor Khoshnevis and has been under R&D in the last two decades, Contour Crafting aims at automated on-site construction of whole buildings as well as subcomponents. Using this process, a single building or a colony of buildings may be constructed automatically with all plumbing and electrical utilities imbedded in each; yet each building could have a different design which can include complex curved features. The technology also has astounding environmental and energy impacts. The entry level implication is especially profound for emergency shelter construction and low income housing. Professor Khoshnevis is working closely with NASA to explore possible applications of CC in building on other planets. This new mode of construction will be one of the very few feasible approaches for building using in-situ material on planets such as Moon and Mars, which are being targeted for human colonization before the end of the century. CC has received international attention and could soon revolutionize the construction industry.

Biography:

Mr. Behrokh Khoshnevis is a Dean's Professor of engineering at University of Southern California and is a Fellow of the National Academy of Inventors and a member of the EU Academy of Sciences. Through his passion driven inventive research activities, he has made many useful inventions and innovations in different domains including robotics, haptics, biomedical, oil and gas, renewable energy, fabrication, construction and space systems. His automated construction inventions, Contour Crafting, is destined to cause a revolution in terrestrial construction and is regarded as the most promising approach for planetary construction of human outposts. A prestigious NASA organization awarded Contour Crafting the Grand Prize of the Create the Future Design Contest among +1000 globally competing technologies. Prof. Khoshnevis has over 160 technical publications, and holds many international patents. He has developed products that help people worldwide. He is a NASA Innovative Advanced Concept Fellow, a Fellow of the Institute of Industrial Engineering, and a Fellow of the Society for Computer Simulation.

