

Cloud Based Intelligent Robotics

Prof. Peter Sincak

Center for Intelligence Technologies

Department of Cybernetics and Artificial Intelligence

Faculty of Electrical Engineering and Informatics, Technical University of Kosice

Slovakia

Peter.Sincak@tuke.sk

www.petersincak.com , www.ai-cit.sk, www.cloudai.sk

Abstract

The talk consists of two parts. In the first part, a brief review of artificial intelligence, including history, the state of the art and visions of this scientific discipline will be presented. The major challenges of artificial intelligence will also be articulated. The special focus will be given to “learning” from different sources including learning from data, learning from experience, and learning from virtualization concept using simulators or virtual reality tools. Also classification problems and knowledge acquisition and knowledge incrementally including crowdsourcing will be addressed. In this part, artificial intelligence tools for emotional state classification will also be discussed as an important part of application of artificial intelligence and psychology in humanoid robotics.

The second part of the talk will be focused on synergy among artificial intelligence, Cloud computing and robotics. The special focus will be given to intelligent robotic learning based on teleoperation and gradual learning towards mission based autonomy. The original concept of prof. Inaba (The University of Tokyo, 2000) considering remote brain of robots is nowadays fully supported by Cloud computing technology and some partial results will be presented toward Cloud based tele-operation with ability to learn. The essential goal is to present a challenge to build a worldwide platform for humanoid robots to be connected and use abilities of “collective learning” which is commonly used in the most advance real world application including autonomous car (Tesla). Cloud based Human Robot Environment Interaction concept will be presented. The talk beside results will also present personal opinions about the basic major challenges in intelligent robotics for coming years including necessity of merging different communities with aim to be more effective in the global goal to provide humanoid robots as subordinated companions for people to improve humans’ quality of life on the planet.

Short Bio

Peter Sinčák is a Professor in the branch of artificial intelligence at Technical University of Kosice, Slovakia, European Union. He is an acting Head of Department of Cybernetics and Artificial Intelligence and professor at Center for Intelligent Technologies. He is also a Program director for the branch of Artificial Intelligence and Intelligent Systems at Technical University of Kosice, Slovakia. He is lecturing AI basic course, AI advance course and he is a head of State exam

committee for AI in all degrees. He is a IEEE member and Slovak AI Society member. He is a Vice-President of Slovak AI Society. He has a number of contacts in Slovak Industrial and Banking domains. In 2009-2012, he was an executive director of Kosice IT Valley group which consist of 20 IT companies in the regions. His efforts go towards boosting application potential of AI in industry and everyday life. He is a member of a number of EU related projects including Technological Research Park at TU Kosice. His main interest is an integration of Cloud computing, artificial/computational Intelligence and robotics. He had a number of invited talks in Japan, Korea, EU and USA. He is a founder of Center of Intelligent technologies from 1995 at Technical University of Kosice, Slovakia. He established a number of collaborations with universities in Japan mainly Waseda, Tokyo institute of Technology and Kyutech University.

www.petersincak.com