Laboratory for Virtual and Augmented Reality Communications and Networked Systems

Mobile VR

mmWave and FSO Networking

Scalable 6DOF 360° Video

Virtual Teleportation

UAV-IoT Fast RL

Multi-Connectivity Streaming

Mobile Edge Computing
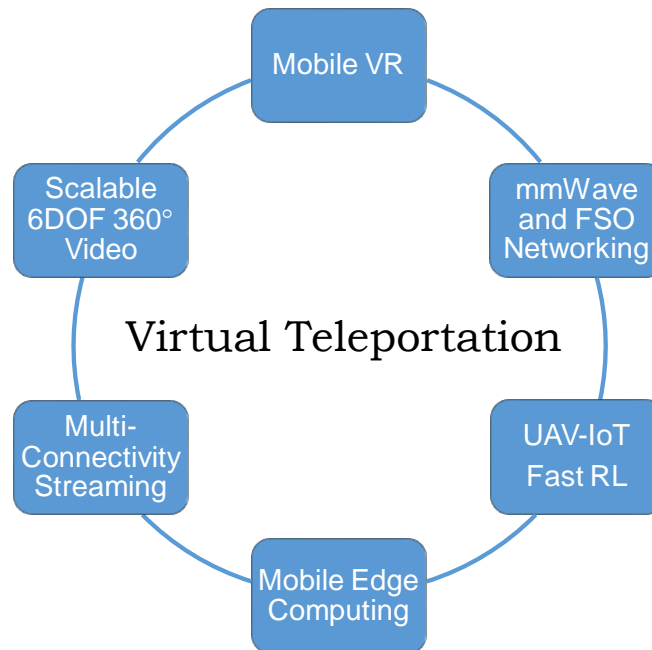
Staff (student, postdoc, and developer) Openings

Multiple PhD, postdoc, intern, and developer openings are available at the 5D VREALITY Lab for Next Generation Communications led by Prof. Jacob Chakareski, supported by cutting-edge federally and industry funded projects (NSF, NIH, Adobe). The lab is hosted in the College of Computing of the New Jersey Institute of Technology (NJIT). It features state-of-the-art equipment: large field of view immersion displays, high-definition visual and range sensors, virtual and augmented reality head-mounted displays, UAV-IoT devices, and 5G/LTE-A MIMO SDR boards. The doctoral positions are fully funded (stipend and tuition for up to four years, including summer support) and are available immediately, once the suitable candidates pass the application requirements. The postdoc openings are on a multi-year basis, renewed every year, subject to performance evaluation. The developer openings feature flexible working hours, require experience in Unity 3D, C#, and JavaScript, and can be part time.

Students at the B.S. or M.S. level with background in computer science, computing, electrical and computer engineering, or applied mathematics are encouraged to apply. The accepted candidates will work on cutting edge research at the intersection of networked virtual and augmented reality, optical and millimetre wave mobile wireless networking, UAV-IoT sensing and communication, multi-connectivity streaming, scalable 6DOF 360° video, system-aware reinforcement learning, and **virtual human teleportation**. The lab also investigates future 5G/IoT network architectures and interdisciplinary applications to remote sensing, disaster relief, environmental monitoring, and cyber-physical health care systems and devices.

Solid mathematical background and knowledge of programming languages and software tools (e.g., Matlab, NS-2/3) is required. Above all, the applicants must be self-motivated to learn quickly and work effectively on challenging research problems. For a description of

recent research activities carried out by Prof. Chakareski, please visit www.jakov.org.

Application process: Please send your CV in attachment to jacobcha@njit.edu and specify in the subject line "X opening application", where "X" could be {PhD, postdoc, internship, or developer}. Outline your background and research interests in the e-mail. Include a one-page research statement describing your qualifications and how you can contribute to our investigations (summarized on the web site referenced above). Include 3-4 references (names and contact details) and any publications you may have authored.

GRE and IELTS/TOEFL scores are required for international applicants. An applicant is advised to include course transcripts and arrange for reference letters to be sent to Dr. Chakareski.

Recent references:
- IEEE TIP 2020: Viewport-Adaptive Scalable Multi-User Virtual Reality Mobile-Edge Streaming
- IEEE TSP 2020: Accelerated Structure-Aware Reinforcement Learning
- IEEE TVT 2020: Lifetime Maximization in Mobile Edge Computing Networks
- IEEE TCOM 2020: Delay-Sensitive Energy-Harvesting Wireless Sensors: Analysis and Scheduling
- IEEE TMM 2020: Collaborative Content Placement Among Wireless Edge Caching Stations
- IEEE TIP 2019: UAV-IoT for Next Generation Virtual Reality
- Globecom 2019: Neighbor Discovery in a Free-Space-Optical UAV Network
- IEEE MMSP 2019: Millimeter Wave meets Edge Computing for Mobile High-Fidelity 360° VR
- IEEE ICC 2019: Visible Light Communication for Next Generation Untethered Virtual Reality Systems
- ACC 2018: Coalition Formation for Coordinated Task Allocation in Heterogeneous UAV Networks
- ICC 2018: Viewport-Driven Rate-Distortion Optimized 360° Video Streaming
- ICC 2018: Energy Efficiency Analysis of UAV-Assisted mmWave HetNets
- ICC 2018: Structural Properties of Optimal Transmission Policies for Delay-Sensitive Wireless Sensors
- Asilomar 2017: Optimal measurement policy for predicting UAV network topology
- MMSP 2017: Convexity characterization of virtual view reconstruction error in multi-view imaging
- MM 2017: Optimal Set of 360-Degree Videos for Viewport-Adaptive Streaming
- SIGCOMM 2017: VR/AR Immersive Communication: Caching, Edge Computing, and Trans. Trade-Offs
- MobiSys 2017: Drone Networks for Virtual Human Teleportation
- ICC 2017: Viewport-adaptive navigable 360-degree video delivery (**best paper award**)
- INFOCOM 2017: UAV-IoT for Ubiquitous Immersive Communication and Virtual Human Teleportation

About: The New Jersey Institute of Technology (www.njit.edu) is a major comprehensive student-centered research university founded in 1881. NJIT is a leading public polytechnic university, and is consistently highly ranked nationally. It is located in the vibrant University Heights area of the rejuvenating and resurging downtown Newark. The close proximity to NYC and the strong tech industry presence in the area provide ample opportunities for further professional and personal development, making studying at NJIT very appealing.