Victor Yu Liu, Ph.D. +1-408-768-8806, victor.liu@umich.edu, linkedin.com/in/liuyu

Work Experience

2022 – present: **U. of Michigan**, Ann Arbor, MI **Adjunct Professor**
- Build self-operating networks using machine learning and data

2019 – Nov. 2023: **ViaSat**, Ann Arbor, MI & San Jose, CA **SDN Architect, Acting Manager**
- Intent-based networking and close-loop network automation
- AI/ML innovation for incident mitigation and generative ML-based design

2015 – 2019: **Visa**, Foster City, CA **Chief Network Architect**
- Automate network verification for change management using Intent Based Networking
- Network change drift analysis and config generation from golden template
- Network tools rationalization - moving FCAPS features to micro-services
- Long term architectural evolution for backbone of global payment network
- SD-WAN vendor evaluation and selection for access WAN

2012 – 2015: **Huawei**, Santa Clara, CA **Principal Architect**

2010 – 2011: Boston, MA **Research Consultant**
- Created a multi-year program on IP/optical network management & OSS
- Recruited multiple software architects and built a global OSS software team of 60
- Led corporate-wide strategies, standards and implementations in the SDN core team
- Advised network planning & optimization research, doubled team to 30+ due to RoI
- Led algorithm research for IP & optical network planning solutions, innovated on areas in routing wavelength assignment optimization, ROADMS and regenerator modeling and placement, impairment-aware planning, packet and optical multi-layer network protection, mobile backhaul capacity budgeting and TCO comparison between OTN and MPLS, shared mesh path protection against dual failures, min-max fairness Traffic Engineering (TE) for DC Interconnects, traffic and network data analytics

2007 – 2009: **Juniper**, Sunnyvale, CA **Staff Engineer**
- Led software development of packet forwarding engine (PFE) on backbone T/TX routers
- Worked on the control and data plane interfaces, QoS/CoS, multicast and load balancing

2001 – 2007: **OPNET**, Santa Clara, CA & Cary, NC **Senior Software Engineer**
- Owned various IP/MPLS automated network design features and optimization solutions, i.e., IP network capacity planning, offline MPLS TE, topology design, fast reroute deployment, DiffServ-TE, and backbone CapEx optimization
- Owned graph models, routing & network flow algorithms, in C++
- Implemented more than half of design solutions for NP-Hard problems in SeriveProvider Guru product, which was OEMed by Cisco as the Network Planning Solution in 2005-08
- Worked with the strategic planning teams of top-tier carriers on network innovations
- OPNET was acquired by Riverbed in 2011 for $1B for its APM & NPM capabilities.

Education

2001: Ph.D., University of Pittsburgh, in Information Science & Telecommunications
1996: M.E., Tsinghua University, in Communication & Electronic Systems
1993: B.E., Xi'an Jiaotong University, in Information Science & Technology

Publications, Patents and Presentations

[1] Systems and Methods for Detection and Correction of Network Problems via Neural Networks,
Victor Liu, et. al., US Patent Application, Nov., 2022

[2] Protection against dual failures for resilient two layer networks,
Victor Liu, Yufei Wang, US Patent 9,973,377, 2018

[3] Shared backup path protection for dual link failures using successive survivable routing,
Victor Yu Liu, US Patent 9,143,398, 2015

[4] Apparatus and method to find partially disjoint routes for dual fiber-cuts,
Victor Y Liu, Zhicheng Sui, US Patent 9,007,892, 2015

[5] Apparatus and method for spare capacity allocation on dual link failures,
Victor Y Liu, US Patent 9,001,648, 2015

[6] Finding partially disjoint paths in shared backup path protection for dual fiber cuts,
Victor Y Liu, US Patent 8,995,827, 2015

[7] Protection Coordination for Dual Failure on Two-Layer Networks,
Victor Liu, Design of Reliable Communications Network (DRCN), 2015

[8] Dual Failure Resiliency on Single Failure Protected Packet Optical Integrated Networks,
Zhicheng Sui, Victor Liu, DRCN, 2015

[9] Stitching Layers and Domains for Enhanced Service Reliability,
Victor Liu, MPLS SDN World Congress, Paris, France, 2015

[10] Capacity Budgeting for Packet Optical Integration,
Victor Liu, IP+Optical Network iPOP2014, Tokyo, Japan, 2014

[11] Design and Optimization of Packet Optical Integration,
Victor Liu, MPLS SDN World Congress, Paris, France, 2014

[12] Spare Capacity Allocation using Shared Backup Path Protection with Partially Disjoint Paths,
Victor Yu Liu, David Tipper, DRCN, Budapest, 2013

[13] Spare capacity allocation using Shared Backup Path Protection for Dual Link Failures,
Victor Yu Liu, David Tipper, Computer Communications, Vol. 36, No. 6., 2013

[14] Finding Partially Disjoint Routes for Dual Fiber-Cut Protection on Bi-Connected Networks,
Victor Yu Liu, Zhicheng Sui, Optical Fiber Conference (OFC), 2012

[15] Traffic Grooming in WDM Mesh Networks with Loop-Free Paths,
Kwok Shing Ho, Victor Yu Liu, OFC, 2012

[16] Internet Backbone Evolution and Innovations,
Victor Yu Liu, keynote at Huawei's First IP/Optical Summit, Xi'An, China, 2011

[17] Spare capacity allocation in two-layer networks,
Yu Liu, David Tipper, Korn Vajanapoom, IEEE J. S. A. on Communications, 2007

[18] Approximating optimal spare capacity allocation by successive survivable routing,
Yu Liu, David Tipper, Peerapon Siripongwutikorn, IEEE/ACM Trans. Networking, 2005

[19] Apparatus and method for spare capacity allocation,
Yu Liu, David Tipper, US Patent 6,744,727 B2, 2001

[20] A Tandem Queue Model for Two-Server Resequencing System,
Yu Liu, Zhisheng Niu, Xiaokang Lin, Jianhua Lu, Technical Report, Tsinghua University, 1996