



БИОГРАФИЈА

Др Александар Коларов рођен је 21.10.1960. године у Ваљеву. Дипломирао је 1984. године на одсеку Електроника, смер Аутоматско Управљање, Електротехничког Факултета у Београду. Магистрирао је 1987. године на одсеку за Аутоматско Управљање Електротехничког Факултета у Београду (тема: *Пројектовање филтара за праћење покретних циљева*). Докторирао је 1993. године на Rutgers University, Electrical and Computer Engineering Department, New Jersey, USA, где је стекао звање *Doctor of Philosophy*. Тема докторске тезе је: *Dynamic Routing in Multi-Service Networks*.

После завршених редовних студија у Београду, запослио се у Институту “Михајло Пупин” у Београду, где је радио као инжењер на пројектима за симулацију и дизајн система за аутоматско управљање. Један од таквих пројеката је послужио као основа његове магистарске тезе. Од 1989. године са сталним је пребивалиштем у САД. Као студент докторских студија провео је 4 године на Rutgers Univerzitetu. У току студија је поред истраживачког рада био укључен и у наставу на редовним студијама прво као асистент а затим и као професор.

После тога је био запослен у Истраживачком Институту компаније NEC прво као истраживач (research staff member) а затим као виши истраживач (senior research staff member). Током рада у NEC-у је учествовао на 20-так пројеката чија је проблематика базирана на дизајну и имплементацији протокола на неколико различитих нивоа (од другог до петог) TCP или OSI модела рачунарских мрежа. Најзначајнији допринос је био на пројекту за дизајн и имплементацију контроле у NEC ATM M20 switch-у. За иновацију на овом пројекту кандидату је додељен патент, а рад је објављен у престижном IEEE/ACM Transaction on Networking.

Од 2004. године каријеру је наставио у компанији Cisco на позицији техничког лидера (*technical leader*). Највећи део пројеката на којима је радио је био везан за имплементацију *Voice over IP* технологије на Cisco-вим производима. Последњих пола године рада у Cisco-у провео је радећи на софтверској платформи тада најкомплекснијег router-а на свету (CRS-1).

Од 2007. године каријеру наставља у Applied Research јединици компаније Telcordia на позицији старијег научног сарадника (*senior scientist*). Након продаје Telcordia-је Ericsson-у 2012. године Applied Research је постао независна јединица са новим именом Applied Communication Sciences.

2018. године компанија DXC Technology као један од делова Hewlett Packard-a се удружила са Applied Communication Sciences и формирала нову компанију названу Perspecta Engineering.

Applied Research јединица је у новој компанији постала Perspecta Labs (<https://www.perspectalabs.com/>) са више од 300 истраживача. Највећи корисник услуга Perspecta Labs у области информационах и инжењерских технологија је U.S. Government, посебно њена DARPA Агенција (<https://www.darpa.mil/>).

Од 2007. је учествовао на око 20 пројеката који се могу поделити у следећих 5 области:

1. Management and control of wireless and fixed networks,
2. Network modeling and simulation,
3. Performance testing,
4. Cybersecurity,
5. SmartGrid networks.

Од најзначајнијих пројеката финансираних од Darpa Агенције на којима ради наводимо оне најважније:

1. DARPA Edge-Directed Cyber Technologies for Reliable Mission Communication (EdgeCT) - <https://www.darpa.mil/program/edge-directed-cyber-technologies-for-reliable-mission-communication>
2. DARPA Extreme DDoS Defense (XD3) - <https://www.darpa.mil/program/extreme-ddos-defense>
3. DARPA Fast Network Interface Cards (FastNICs) - <https://www.darpa.mil/program/fast-network-interface-cards>

Током досадашњег рада у Applied Research-у је неколико пута добио похвалу за допринос на пројекту од стране спонзора.

Поред рада у у компанији, од 2008. године је *adjunct professor* (професор спољни сарадник) на Electrical and Computer Engineering Department-у, универзитета New Jersey Institute of Technology, Newark, New Jersey. На овом факултету он предаје курс “Network Modeling” на постдипломским студијама.

2. Објављени радови, пројекти и учешће на саветовањима:

Поглавља

1. D. Cavendish, A. Kolarov and B. Sengupta, "Minimizing the Number of Wavelength Conversions in WDM Networks with Hybrid Optical Cross-Connects," to appear in *Edited Volume of the Selected Papers from the Seventh Inform's Telecommunications Conference*, Telecommunications Planning: Innovations in Pricing, Network Design and Management, S. Raghavan and G. Anandalingam (editors), Springer, Nov.2005, pp. 203-224.

Журнали

2. A. Kolarov and G. Ramamurthy, "A Control-Theoretic Approach to the Design of an Explicit Rate Controller for ABR Service," *IEEE/ACM Trans. Networking*, vol. 7, no. 5, pp. 741-753, Oct. 1999.
3. A. Kolarov, G. Ramamurthy, T. Takamichi, and T. Murase, "Comparison of Three Policing Algorithms for ABR Conformance," *Journal of the Brazilian Comp. Soc.*, vol. 5, no. 3, pp. 26-36, Apr. 1999.
4. A. Kolarov and G. Ramamurthy, "Comparison of Explicit Rate and Explicit Forward Congestion Indication Flow Control Schemes for ABR Service in Wide Area Networks," *Performance Evaluation Journal*, vol. 31, no. 1-2, pp. 89-106, Nov. 1997.
5. A. Kolarov and J. Hui, "On Computing Markov Decision Theory-Based Cost for Routing in Circuit-Switched Broadband Networks," *Journal of Network and Systems Management*, vol. 3, no. 4, pp. 405-426, Dec. 1995.

Радови

6. A. Kolarov and B. Sengupta, "A Study of Waveband Routing and Wavelength Assignment in Multi-Granular Hybrid Optical Networks," in *Proc. IEEE ICC 2005*, Seoul, Korea, May 2005, pp. 239-243.
7. A. Kolarov, T. Wang, B. Sengupta, and M. Cvijetic, "Impact of Waveband Switching on Dimensioning Multi-Granular Hybrid Optical Networks," in *Proc. IEEE ONDM 2005*, Milan, Italy, Feb. 2005, pp. 371-381.
8. A. Kolarov, B. Sengupta, and A. Iwata "Design of Multiple Reverse Spanning Trees in Next Generation of Ethernet-VPNs," in *Proc. IEEE Globecom 2004*, Dallas, Texas, Dec. 2004, pp. 1390-1395.
9. D. Cavendish, A. Kolarov, and B. Sengupta, "Routing and Wavelength Assignment in WDM Mesh Networks," in *Proc. IEEE Globecom 2004*, Dallas, Texas, Dec. 2004, pp. 1016 - 1022.
10. D. Cavendish, A. Kolarov, and B. Sengupta, "Is It a Good Idea to Design WDM Networks to Minimize the Number of Wavelengths Used?," in *Proc. IEEE ICC 2004*, Paris, France, June 2004, pp. 2097-2101.
11. D. Cavendish, A. Kolarov, and B. Sengupta, "Minimizing the Number of Wavelength Conversions in WDM Networks with Hybrid Optical Cross-Connects," *The Seventh Inform's Telecommunications Conference*, Boca Raton, Florida, Mar. 2004, pp 182-184.
12. A. Kolarov and B. Sengupta, "Waveband Routing and Wavelength Assignment in Hybrid Hierarchical Optical Networks," in *Proc. 18th International Teletraffic Congress*, Berlin, Germany, Sep. 2003, pp. 911-920.
13. A. Kolarov and B. Sengupta, "An Algorithm for Waveband Routing and Wavelength Assignment in Hierarchical WDM Mesh Networks," in *Proc. IEEE High Performance Switching and Routing Workshop 2003*, Torino, Italy, June 2003, pp. 29-36.

14. A. Kolarov, R. Fan, and C. Lu, "Global and Dynamic Round-Robin Scheduler for Terabit Routers," in *Proc. IEEE ICC 2003*, Anchorage, Alaska, May 2003, pp. 1641-1647.
15. R. Izmailov, A. Kolarov, R. Fan, and S. Araki, "Hierarchical Optical Switching: A Node-Level Analysis," in *Proc. IEEE High Performance Switching and Routing Workshop 2002*, Kobe, Japan, May 2002, pp.309-313.
16. A. Kolarov, "The OPNET Simulation Model for ATM Passive Optical Networks," in *Proc. IEEE CAMAD2002*, New York City, May 2002, <http://netlab.caltech.edu/CAMAD02/>.
17. A. Kolarov, "Study of the TCP/UDP Fairness Issue for the Assured Forwarding Per Hop Behavior," in *Proc. IEEE High Performance Switching and Routing Workshop 2001*, Dallas, Texas, May 2001, pp.190-196.
18. A. Kolarov, "IP QoS Architecture," in *Carrier IP Telephony 2000 Comprehensive Report*, International Engineering Consortium, 2000, pp. 125-130.
19. J. P. Redlich, M. Suzuki, A. Kolarov, and S. B. Weinstein, "IP Services Creation in a Programmable Router," in *First IEEE/Popov Workshop on Internet Technologies and Services*, Moscow, Russia, Oct. 1999, pp. 51-61.
20. A. Kolarov, G. Ramamurthy, T. Takamichi, and T. Murase, "Impact of Misbehaving Users and the Role of Policers in ABR Service," in *Proc. IEEE GLOBECOM 1998*, Sydney, Australia, Nov. 1998, pp.1533-1540.
21. A. Kolarov, G. Ramamurthy, T. Takamichi, and T. Murase, "Comparison of Three Policing Algorithms for ABR Conformance," in *Proc. IEEE CAMAD 1998*, Sao Paulo, Brazil, Aug. 1998, pp. 27-36.
22. A. Kolarov and G. Ramamurthy, "A Testbed Implementation of Explicit Rate Based ABR Service via a Dual Proportional-plus-Derivative Controller," in *Proc. IEEE GLOBECOM 1997*, Phoenix, AZ, Nov. 1997, pp. 806-811.
23. G. Ramamurthy and A. Kolarov, "Application of Control Theory for the Design of Closed Loop Rate Control for ABR Service," in *Proc. 15th International Teletraffic Congress*, Washington, DC, June 1997, pp. 751-760.
24. A. Kolarov and G. Ramamurthy, "An Implementation Study of Dual Proportional-plus-Derivative Controller for Explicit Rate Based ABR Service," in *Proc. IEEE ATM 1997 Workshop*, Lisboa, Portugal, May 1997, pp. 368-377.
25. A. Kolarov and G. Ramamurthy, "A Control Theoretic Approach to the Design of Closed Loop Rate Based Flow Control for High Speed ATM Networks," in *Proc. IEEE INFOCOM 1997*, Kobe, Japan, Apr.1997, pp. 293-301.
26. K. Sohraby and A. Kolarov, "A Mathematical Model for Representing Aggregate Traffic in Mobile Networks," in *Proc. ICPMSC 1996*, Hong Kong, Dec. 1996, pp. 48-51.
27. A. Kolarov and G. Ramamurthy, "Comparison of Explicit Rate and Explicit Forward Congestion Indication Flow Control Schemes for ABR Service in Wide Area Networks," in *Proc. IFIP-IEEE Conf. On Broadband Commun.* 1996, Montreal, Canada, Apr. 1996, pp. 123-134.
28. Kolarov and G. Ramamurthy, "Comparison of Explicit Rate and Explicit Forward Congestion Indication Flow Control Schemes for ABR Service," in *Proc. 1996 Int. Zurich Seminar on Digital Commun.*, Zurich, Switzerland, Feb. 1996, pp. 347-358.
29. Kolarov and S. Weinstein, "Flexible Bandwidth Allocation in Hybrid Fiber Coax Distribution Networks," in *Proc. IEEE GLOBECOM 1995*, Singapore, Nov. 1995, pp. 983-987.
30. Kolarov, G. Ramamurthy, and V. Bansal, "Implementation of congestion control schemes for ABR Service in an ATM local area network testbed," in *Proc. SPIE 1995*, Philadelphia, PA, Oct. 1995, vol.2608, pp. 209-217.
31. S. Maric and A. Kolarov, "Threshold Based Admission Control Policies for Multi-Rate Services in the DECT System," in *Proc. IEEE PIMRC 1995*, Toronto, Canada, Sep. 1995, pp. 1089-1093.
32. Kolarov and G. Ramamurthy, "End-to-end Adaptive Rate Based Congestion Control Scheme for ABR Service in Wide Area ATM Networks," in *Proc. IEEE ICC 1995*, Seattle, WA, June 1995, pp. 138-143.

33. Kolarov and J. Hui, "Least Cost Routing in Multi-Service Networks: Part II," in *Proc. IEEE INFOCOM 1995*, Boston, MA, Apr. 1995, pp. 289-296.
34. Kolarov, A. Atai, and J. Hui, "Application of Kalman Filter in High-Speed Networks," in *Proc. IEEE GLOBECOM 1994*, San Francisco, CA, Dec. 1994, pp. 624-628.
35. Kolarov and G. Ramamurthy, "Comparison of Congestion Control Schemes for ABR Service in ATM Local Networks," in *Proc. IEEE GLOBECOM 1994*, San Francisco, CA, Dec. 1994, pp. 913-918.
36. Kolarov and J. Hui, "Least Cost Routing in Multiple-Service Networks," in *Proc. IEEE INFOCOM 1994*, Toronto, Canada, June 1994, pp. 1483-1489.
37. Kolarov and J. Hui, "CANeT: An Object-Oriented Tool for Link and Network Design, Analysis, and Simulation," in *Proc. IEEE CAMAD 1994*, Princeton, NJ, Apr. 1994, pp. 29-31.
38. Kolarov and J. Hui, "Dynamic Routing in Multiple-Service Networks," in *Proc. 27th CISS*, John Hopkins Univ., Baltimore, MD, Mar. 1993, pp. 689-694.
39. Kolarov and J. Hui, "Modeling and Kalman type prediction of traffic fluctuations in multiple-service networks," in *Proc. 1st IEEE Reg. Control Conf.*, Polytechnic Univ., Brooklyn, NY, July 1992, pp. 162-165.
40. Kolarov and J. Hui, "Least-Cost-Routing on Symmetrical Loss Networks," in *Proc. 26th CISS*, Princeton Univ., NJ, Mar. 1992, pp. 935-940.
41. Kolarov, N. Gluhajic, and V. Zivkovic, "Design of Kalman Filter for Targets Tracking," in *Proc. ETAN*, Bled, Yugoslavia, June 1987.
42. R. Krtolica and A. Kolarov, "Design of the Tracking Filter using Spline Functions," in *Proc. ETAN*, Herceg Novi, Yugoslavia, June 1986.
43. M. Matausek, N. Gluhajic, and A. Kolarov, "Design of Optimal Controller for one Electro-Hydraulic System," in *Proc. ETAN*, Herceg Novi, Yugoslavia, June 1986.

Конференције

44. A. Kolarov and G. Ramamurthy, "Design of a Closed Loop Feedback Control for ABR Service," *SIAM Annual Meeting 1996*, Kansas City, Missouri, Jul. 1996. (invited paper)
45. Kolarov and G. Ramamurthy, "An ATM Network Simulator for Design, Analysis, and Simulation of Congestion Control Schemes," *IEEE Symposium on Planning and Design of Broadband Networks*, Montebello, Canada, Oct. 1994.
46. Kolarov and J. Hui, "Circuit Access Policies in Loss Multiple-Service Networks: A Markov Decision Approach," *TIMS/ORSA Joint National Meeting*, Chicago, IL, May 1993.
47. Kolarov and J. Hui, "CANeT: An Object-Oriented Integrated Network Design and Control Tool," *The Second ORSA Telecommunications Conference*, Boca Raton, Florida, Mar. 1992.
48. Invited Talks "A Study of Waveband Routing and Wavelength Assignment in Multi-Granular Hybrid Optical Networks,"

Стручно усавршавање:

- Introduction to Service Oriented Architecture (SOA) and Web Services.
- Introduction to Android Software Platform.
- Mastering Long Term Evolution (LTE).
- Project Management.

Радови објављени у журналима:

- Kolarov and Gi Tae Kim, "An OPNET based Novel Cross-layer Model for Analyzing SOA-based Information Services," *Singidunum Journal of Applied Sciences*, vol. 9, no. 1, Apr. 2012.

Радови објављени у конференцијским proceedings-има:

- R. Vaidyanathan, Gi Tae Kim, A. Kolarov, F. Caruso, G. Forbes, "A Novel Cross-Layer Modeling Framework for Analyzing SOA-based Information Services," in *Proc. MILCOM 2011*, Baltimore, USA, Nov. 2011. pp. 2019 - 2024.
- P. Gurung, K. Chang, S. Samtani, L. Wong, A. Kolarov, D. Foote, A. Staikos, M. Patel, "Performance of QoS System for Future Battlefield Networks," in *Proc. MILCOM 2009*, Boston, USA, Oct. 2009. pp. 1-6.

Презентације на конференцијама:

- A. Kolarov, "A Novel Cross-Layer Modeling Framework for Analyzing SOA-based Information Services," *Network 2011*, Valjevo, Serbia, June 2011.
- A. Kolarov, "Is Your Network Really Secure?," *Network 2010*, Valjevo, Serbia, June 2010

Учествовање у организацији конференција:

Technical Program Committee Member for IEEE High Performance Switching and Routing (HPSR) 2013 Conference, Taipei, Taiwan, July 8 - July 11, 2013.

- Technical Program Committee Member for IEEE ICC 2013 Conference - Communications QoS, Reliability, and Performance Modeling Symposium, Budapest, Hungary, June 9 - June 13, 2013.
- Publication Chair for High Performance Switching and Routing (HPSR) 2012 Conference, Belgrade, Serbia, June 24 - June 27, 2012.
- Tutorial Chair for IEEE Sarnoff Symposium 2012, Newark, May 21 - May 22, 2012.
- Technical Program Committee Member for IEEE High Performance Switching and Routing (HPSR) 2011 Conference, Cartagena, Spain, July 4 - July 6, 2011.
- Technical Program Committee Member for IEEE ICC 2011 Conference - Communications QoS, Reliability, and Performance Modeling Symposium, Kyoto, Japan, June 5 - June 9, 2011.
- Technical Program Committee Member for IEEE HPSR 2010 Conference - Dallas, USA, June 13 - June 16, 2010.
- Technical Program Committee Member for IEEE ICC 2010 Conference - Communications QoS, Reliability, and Performance Modeling Symposium, Cape Town, South Africa, May 23 - May 27, 2010.
- Technical Program Committee Member for IEEE Globecom 2009 Conference - Communications Quality of Service, Reliability and Performance Modeling Symposium, Honolulu, USA, Nov. 30 - Dec. 4, 2009.
- Technical Program Committee Member for IEEE HPSR 2009 Conference - Paris, France, June 22 - June 24, 2009.
- Technical Program Committee Member for IEEE ICC 2009 Conference - Communications QoS, Reliability, and Performance Modeling Symposium, Dresden, Germany, June 14 - June 18, 2009.
- Technical Program Committee Member for IEEE Globecom 2008 Conference - Next Generation Networks, Protocols, and Services Symposium, New Orleans, USA, Nov. 30 - Dec. 4, 2008.

- Technical Program Committee Member for IEEE HPSR 2008 Conference - Beijing, China, May 2008.
- Technical Program Committee Member for IEEE ICC 2008 Conference - Communications QoS, Reliability, and Performance Modeling Symposium, Beijing, China, May 2008.