

## 2018 Newly Elevated Fellows

Pieter Abbeel

*for contributions to apprenticeship and reinforcement learning for robotics and autonomous systems*

Pamela Ann Abshire

*for contributions to CMOS biosensors*

Haithem Abu-rub

*for contributions to power electronic converters for renewable energy applications*

Erik Agrell

*for contributions to coding and modulation in optical communications*

Fauzia Ahmad

*for contribution to through-the-wall radar imaging*

Anastasia Ailamaki

*for contributions to hardware-conscious database systems and scientific data management*

Matteo Albani

*for contributions to the uniform geometrical theory of diffraction*

Andrew Alleyne

*for contributions to the control of thermal management systems*

Pietro Andreani

*for contributions to CMOS integrated voltage-controlled oscillators*

Walid Aref

*for contributions to spatio-temporal database indexing and query processing*

Kohtaro Asai

*for contributions to video coding development and standardization*

Hajime Asama

*for contributions to distributed autonomous robotic systems*

Bertan Bakkaloglu

*for contributions to radio frequency circuits*

Bijnan Bandyopadhyay

*for contributions to discrete-time, multi-rate, output feedback sliding-mode control*

## 2018 Newly Elevated Fellows

Paul Barford

*for contributions to Internet measurement and security*

N. Scott Barker

*for contributions to millimeter-wave and terahertz micromachining*

Erik Blasch

*for leadership in aerospace information fusion systems*

Glenn Boreman

*for contributions to optical and infrared antenna technologies*

Vicente Boria

*for contributions to high-power microwave filters and multiplexers*

Timothy Boykin

*for contributions to atomistic models for semiconductor device simulation*

Maurizio Bozzi

*for contributions to substrate integrated waveguides and integrated periodic structures*

Oliver Brock

*for contributions to mobile manipulation and grasping*

Alexander Bronstein

*for contributions to three-dimensional geometric processing in imaging*

Charles Bunting

*for educational contributions to electromagnetic compatibility and reverberation chambers*

Karen Butler-Purry

*for contributions to expanding minority participation in power systems education*

Marco Caccamo

*for contributions to the theory and applications of hard real-time multicore computing*

Yigang Cai

*for innovations in high-speed wireless networks*

Giuseppe Calafiore

*for contributions to probabilistic methods for robust control design*

## 2018 Newly Elevated Fellows

Jeffrey Calame

*for contributions to high-power microwave and millimeter-wave amplifiers enabled by composite dielectric materials*

Linda Camp

*for research in human-centered risk and security*

Mark Campbell

*for contributions to control and estimation theory for autonomous systems*

Gustau Camps-Valls

*for contributions to machine learning in remote sensing*

Emmanuel Candes

*for contributions to sparse and low-rank signal and image processing*

Leo Casey

*for contributions to high-speed power electronic interfaces for grid-tied distributed resources*

Sherman Chan

*for contributions to power system modeling and analysis tools for protective relaying*

Chip Hong Chang

*for contributions to hardware security*

Kun-Yung Chang

*for contributions to transceivers for high-performance networking and high-density memories*

Ni-Bin Chang

*for contributions to computational techniques for the analysis of environmental sustainability*

Tsung-Yung Chang

*for application of SRAM technology to low-power and high-performance computing*

Kuan-Neng Chen

*for contributions to 3D integrated circuit and packaging technologies*

Wen-Hua Chen

*for contributions to the applications of nonlinear disturbance observer based control*

Yi-Jan Emery Chen

*for contributions to monolithic RF CMOS power amplifiers and transceiver frontends*

## 2018 Newly Elevated Fellows

Yiran Chen

*for contributions to spintronic memory*

Po-Tai Cheng

*for contributions to power converters for microgrid applications*

Richard Chernock

*for leadership in next generation digital TV*

Yiu-Ming Cheung

*for contributions to cluster analysis and visual computing*

Carla Chiasserini

*for contributions to energy efficiency and cooperation in wireless networks*

Gianfranco Chicco

*for contributions to data analytics for smart metering*

Gary Christensen

*for contributions to medical image registration and analysis*

Oscar Cordon

*for contributions to genetic and evolutionary fuzzy systems*

Thomas Coughlin

*for leadership in consumer electronics digital storage technology*

Jian Dai

*for contributions to reconfigurable and metamorphic mechanisms*

Swaroop Darbha

*for contributions to intelligent transportation systems and autonomous vehicles*

Ewa Deelman

*for contributions to scientific workflow management*

Andreas Demosthenous

*for contributions to integrated circuits for active medical devices*

Jaydev Desai

*for contributions to medical and swarm robotics*

Po Dong

*for contributions to silicon-based photonic devices and integrated circuits*

## 2018 Newly Elevated Fellows

Qian Du

*for contributions to hyperspectral data processing*

Alan Edelman

*for contributions to the development of technical-computing languages*

Lieven Eeckhout

*for contributions in computer architecture performance analysis and modeling*

Karen Egiazarian

*for contributions to image and video denoising and restoration*

Daniel Ellis

*for contributions to speech, audio, and music processing*

Ehab El-Saadany

*for contributions to distributed generation planning, operation and control*

Fariba Fahroo

*for contributions to computational optimal control theory*

Liping Fang

*for contributions to multiple participant-multiple objective decision making and decision support systems*

Hany Farid

*for contributions to digital forensics*

Dario Farina

*for contributions to neuromuscular electrophysiology and neurorehabilitation*

Steven Feiner

*for contributions to augmented reality and computer graphics*

James Feltes

*for contributions to modelling the dynamic response of power generation systems*

Massimo Franceschetti

*for contributions to random wireless networks*

James Friend

*for contributions to acoustics, microfluidics and microactuation*

## 2018 Newly Elevated Fellows

Pascal Frossard

*for contributions to adaptive image and video representation, coding and communication*

Kevin Fu

*for contributions to embedded and medical device security*

Akira Fujiwara

*for contributions to silicon single-electron devices*

Thomas Furness

*for leadership in virtual and augmented reality*

Andrea Galtarossa

*for contributions to low polarization mode dispersion fibers*

Dave Garrett

*for contributions to beam-forming architectures and implementations*

Alexander Gelman

*for contributions to technologies for streaming and controlling digital video*

Mounir Ghogho

*for contributions to synchronization algorithms for communication systems*

Maria Gini

*for contributions to multi-agent programming in robotics*

Yihong Gong

*for contributions to pattern recognition and multimedia content analysis*

Stefano Grivet-Talocia

*for contributions to passive macromodeling for signal and power integrity*

Cuntai Guan

*for contributions to brain-computer interfaces and applications*

Xinping Guan

*for contributions to stability analysis for time-delay fuzzy systems and intelligent control of nonlinear systems*

Minyi Guo

*for contributions to performance optimization and resource management of parallel and distributed systems*

## 2018 Newly Elevated Fellows

Yongxin Guo

*for contributions to wideband printed antennas*

Jung-Ik Ha

*for contribution to sensorless control of AC drives*

Martin Haardt

*for contributions to multi-user MIMO communications and tensor-based signal processing*

Harald Haas

*for leadership in the design of visible-light and wireless communication systems*

Hashem Hashemian

*for leadership in developing technologies for nuclear reactor monitoring*

Haibo He

*for contributions to adaptive learning*

Tian He

*for development and optimization of networked sensing systems*

Jeffrey Herd

*for leadership in the development of low-cost phased array technology*

Yoshihito Hirano

*for leadership in the development of 1.5-micron wind sensing lidar*

Michel Houssa

*for contributions to materials characterization for advanced MOSFETs*

Naira Hovakimyan

*for contributions to control with applications to aerospace and robotic systems*

Jonathan How

*for contributions to guidance and control of air and space vehicles*

David Howe

*for contributions to global time synchronization*

David Hsu

*for contributions to robot motion planning*

## 2018 Newly Elevated Fellows

Biao Huang

*for contributions to and application of Bayesian soft-sensing for control performance monitoring*

Qingming Huang

*for contributions to multimedia content analysis and visual perceptual processing*

Pan Hui

*for contributions to social-based opportunistic networks*

Brad Hutchings

*for contributions to CAD tools for reconfigurable computing*

Jaroslav Hyneczek

*for contributions to solid-state image sensors*

Kullervo Hynynen

*for contributions to image-guided therapeutic focused ultrasound*

Leon Iasemidis

*for developments in epileptic seizure prediction and closed-loop brain stimulation*

Anil Jampala

*for contributions to the utilization of synchrophasors in energy management systems*

Somesh Jha

*for contributions to the application of formal methods to security*

Jiaya Jia

*for contributions to deblurring techniques in computational photography*

Lynette Jones

*for contributions to tactile and thermal displays*

Sergei Kalinin

*for leadership in piezoresponse force microscopy for nanoscale imaging*

George Karypis

*for contributions to graph partitioning and data mining*

Aleksandar Kavcic

*for contributions to signal processing and coding in data storage*

Noriko Kawakami

*for contributions to large-capacity power converters and applications*



## 2018 Newly Elevated Fellows

Thomas Kazior

*for leadership in microwave and millimeter wave compound semiconductor technology and heterogeneous integration with silicon*

Angelos Keromytis

*for contributions to network security systems*

Sung Kim

*for contributions to the design of microfabricated neural prosthetic devices*

Brian E.D. Kingsbury

*for contributions to acoustic models for automatic speech recognition*

Roberta Klatzky

*for contributions to human visual, auditory, and haptic perception in robotics and virtual environments*

Lang Klaus

*for leadership in heterogeneous integration and microelectronic packaging*

Xenofon Koutsoukos

*for contributions to design of resilient cyber-physical systems*

Michael Krames

*for leadership in GaN-based light-emitting device physics and its commercialization*

D. Richard Kuhn

*for contributions to access control and combinatorial test methods*

Ajay Kumar

*for contributions to non-contact hand-based biometrics recognition*

Isaac Lagnado

*for leadership in the development of silicon-on-sapphire technology*

Pablo Laguna Lasosa

*for contributions to cardiac biomedical signal processing*

Susan Land

*for leadership in software product development*

Jungwon Lee

*for contributions to signal processing for cellular modems*

## 2018 Newly Elevated Fellows

Riccardo Leonardi

*for contributions to image and video compression and multimedia semantic content analysis*

Hui Li

*for contributions to bidirectional converters for utility applications and high efficiency photovoltaic converters*

Qun Li

*for contributions to ad-hoc network routing and sensor networks*

Tao Li

*for contributions to sustainable and power-efficient computer architectures*

Zhuo Li

*for contributions to physical synthesis and modeling of integrated circuits*

Ben Liang

*for contributions to mobility modeling and resource management in wireless networks*

Jiao Li-cheng

*for contributions to artificial neural networks and evolutionary computation*

Chia-Wen Lin

*for contributions to multimedia coding and editing*

Wei Lin

*for contributions to nonlinear control systems*

Zhouchen Lin

*for contributions to low-rank data modeling and image processing*

Giuseppe Lipari

*for contributions to reservation-based real-time scheduling*

Chee Wee Liu

*for contributions to high-mobility germanium and silicon-germanium MOSFETs*

Jie Liu

*for contributions to wireless sensing*

Ming Liu

*for contributions to the development of resistive non-volatile memories*

## 2018 Newly Elevated Fellows

Shengyi Liu

*for application of multifunctional power conversion and power source integration to aircraft*

Guo-Quan Lu

*for development of materials and packaging technologies for power electronics modules*

Jie Lu

*for contributions to fuzzy machine learning and decision support systems*

Wei Lu

*for contributions to development of neuromorphic systems*

Yilong Lu

*for contributions to array antenna techniques in radar systems*

John Luginsland

*for contributions to space-charge limited flow physics, coherent radiation sources, and computational plasma physics*

Richard Lukaszewski

*for contributions to the application of power electronic devices for variable frequency drives*

Xiaobing Luo

*for contributions to packaging of optoelectronic devices*

Shugen Ma

*for contributions to the design and control of environment-adaptive robots*

Zhenqiang Ma

*for contributions to flexible and biodegradable microwave electronics*

Udaya Madawala

*for contributions to power electronics for bi-directional wireless power transfer*

Guoqiang Mao

*for contributions to localization algorithms for wireless networks*

Vladimir Marik

*for leadership in industrial applications of cybernetics*

Sonia Martinez

*for contributions to the geometric mechanics and control*

## 2018 Newly Elevated Fellows

Saverio Mascolo

*for contributions to modeling and control of congestion in packet networks*

Andrea Massa

*for contributions to phased arrays and electromagnetic inverse scattering*

Sanu Mathew

*for leadership in computer arithmetic datapath and security circuits*

Earl Mc Cune

*for leadership in polar modulation circuits and signals*

Paul Meaney

*for contributions to microwave tomography and its translation to clinical use*

Deepankar Medhi

*for contributions to optimization and the design of computer-communication networks*

Russell Meier

*for contributions to global on-line engineering education*

Tommaso Melodia

*for contributions to underwater acoustic and multimedia networks*

Abraham Mendelson

*for contributions to power-aware architecture and value prediction for program execution*

Olgica Milenkovic

*for contributions to genomic data compression*

Jelena Mistic

*for contributions to modeling and performance evaluation in wireless communications*

Andrea Montanari

*for applications of statistical physics to coding theory*

Mehul Motani

*for contributions to wireless communications and sensor networks*

Hideki Motoyama

*for contributions to lightning protection and insulation coordination of electric power systems*

## 2018 Newly Elevated Fellows

Saibal Mukhopadhyay

*for contributions to energy-efficient and robust computing systems design*

Chandra Nair

*for contributions to network information theory*

Girish Nair

*for contributions to control and information in networked dynamical systems*

Hans Peter Nee

*for contributions to silicon carbide power electronics and modular multilevel converters*

Silviu-Iulian Niculescu

*for research on the effects of delays in system dynamics*

Konstantina Nikita

*for contributions to bioelectromagnetics and implantable antennas for medical applications*

Barbara Oakley

*for outreach through online engineering pedagogy*

Hideo Ohno

*for contributions to materials and device design for spintronics*

Yew-Soon Ong

*for contributions to memetic computation and applications*

Hidetoshi Onodera

*for contributions to variation-aware design and analysis of integrated circuits*

Javier Ortega-Garcia

*for contributions to biometrics for forensic speaker verification and signature recognition*

Lawrence Ozarow

*for contributions to capacity characterization of fading and feedback channels*

Hitay Ozbay

*for contributions to robust control for infinite dimensional systems*

Philippe Paillet

*for contributions to the understanding of radiation effects in electronics*

## 2018 Newly Elevated Fellows

Patrick Panciatici

*for contributions to power systems analysis software*

Stefan Parkvall

*for contributions to cellular standards*

Jignesh Patel

*for contributions to high-performance spatial data analysis methods*

Constantinos S. Pattichis

*for contributions to medical diagnostic and mobile health systems*

Shanthi Pavan

*for contributions to delta sigma modulators and analog filters*

George Pavlou

*for contributions to resource management and content-based networking*

Joseph Pawlowski

*for contributions to memory system interfaces*

Peter Perkins

*for contributions to touch current measurement and electric shock protection*

Alexei Pilipetskii

*for contributions to transoceanic fiber-optic transmission systems*

Josien Pluim

*for contributions to medical image analysis*

Massimo Ponicino

*for contributions to low-power circuits and systems*

John Potter

*for contributions to ice-ocean interaction, oceanography, and underwater communication*

Paras Prasad

*for contributions in biophotonics, nanophotonics and novel biomedical technology*

Konstantinos Psounis

*for contributions to multi-hop wireless networks*

## 2018 Newly Elevated Fellows

Hairong Qi

*for contributions to collaborative signal processing in sensor networks*

Jianmin Qu

*for contributions to design and reliability analysis for microelectronic packaging*

Ronghai Qu

*for contributions to flux modulations machines and wind generators*

Tony Quek

*for contributions to heterogeneous and wireless networks*

CJ. Reddy

*for leadership in simulation methods for antenna placement and co-site analysis*

Jennifer Rexford

*for contributions to network management and associated routing systems*

Brian Rigling

*for contributions to synthetic aperture radar imaging*

Michael Riley

*for contributions to automatic speech recognition using Weighted Finite-State Transducers*

Kim Roberts

*for contributions to digital signal processing for coherent optical communication systems*

Justin Romberg

*for contributions to compressive sensing*

Luca Roselli

*for contributions to sustainable radio-frequency modules for wireless sensor networks*

Tajana Rosing

*for contributions to power and reliability management of Systems-on-Chip*

Eugeniusz Rosolowski

*for contributions to education in power system modeling and protection*

Badrinath Roysam

*for contributions to image processing algorithms for biological microscopy*

## 2018 Newly Elevated Fellows

Karen Rudie

*for contributions to the supervisory control theory of discrete event systems*

Kazuhiro Saitou

*for contributions in computational assembly and disassembly design of mechanical products*

Seiji Samukawa

*for contributions to damage-free plasma processing for nano-device manufacturing*

Kevin Sangston

*for contributions to coherent detection of radar signals in clutter*

Venkateswara Anand Sankaran

*for leadership in power electronics and energy storage for electric vehicles*

Rahul Sarpeshkar

*for contributions to ultra low-power biomedical electronics*

Ronan Sauleau

*for contributions to lens and millimeter wave antennas*

Hiroshi Sawada

*for contributions to blind source separation of speech and audio signals*

Dieter Scherer

*for contributions to the design of oscillators and synthesized signal sources*

Alex Schneider

*for contribution to transmission and generation failure modeling*

Clint Schow

*for contributions to high bandwidth optical interconnects*

Bjoern Schuller

*for contributions to computer audition*

Assaf Schuster

*for contributions to cloud computing*

Andrew Senior

*for contributions to pattern recognition in speech, computer vision, and biometrics*



## 2018 Newly Elevated Fellows

Sanjit Seshia

*for contributions to formal methods for inductive synthesis and algorithmic verification*

Shihab Shamma

*for applications of signal processing to auditory neuroscience*

Dinggang Shen

*for contributions to medical image analysis*

Riichiro Shirota

*for contributions to the development of NAND flash memory*

Jiwu Shu

*for contributions to dependable, high-performance storage systems architecture*

Hava Siegelmann

*for contributions to neural computation*

Lowell Smith

*for contributions to ultrasound transducer technology for medical imaging*

Gregory Snider

*for contributions to single electron based computing technology*

Yan Solihin

*for contributions to shared cache hierarchies and secure processors*

Min Song

*for leadership in supporting wireless networking and radio spectrum access*

Miguel Angel Sotelo Vazquez

*for contributions to intelligent vehicles for road infrastructure inspection*

Siddhartha Srinivasa

*for contributions to robotic manipulation and human-robot interaction*

Salvatore Stolfo

*for contributions to machine learning-based computer security*

Peter Stone

*for contributions to reinforcement learning, multiagent systems, and robotics*

## 2018 Newly Elevated Fellows

David Stork

*for contributions to pattern recognition and image analysis*

Weifeng Su

*for contributions to multi-input multi-output wireless communications and cooperative networks*

Rahul Sukthankar

*for contributions to video understanding*

Hong-Bo Sun

*for contributions to laser nanofabrication and ultrafast spectroscopy*

Hongbin Sun

*for contributions to algorithms and technologies for energy management systems*

Shuji Tanaka

*for contributions to micro-electromechanical systems for acoustic wave devices, physical sensors, and power generation*

Mark Tehranipoor

*for contributions to integrated circuits security and trust*

Juergen Teich

*for contributions to hardware/software co-design for embedded systems*

Marina Thottan

*for leadership in high-speed internet-protocol networks*

Yingli Tian

*for contributions to automatic facial expression analysis and human activity understanding*

Jocelyne Troccaz

*for contributions to robotics and imaging for medical applications*

John Tsotsos

*for contributions to active vision and computational models of visual attention*

Marcelo Valdes

*for contributions to improving the safety and reliability of low voltage power systems*

Matthew Valenti

*for contributions to cooperative diversity and development of distributed turbo codes*

## 2018 Newly Elevated Fellows

Victor Veliadis

*for contributions to development of silicon carbide power devices*

Giovanni Vigna

*for contributions to Internet security and cybercrime prevention*

Sergiy Vorobyov

*for contributions to optimization in robust signal processing*

Haixun Wang

*for contributions to knowledge bases for text understanding*

Li-C Wang

*for contributions to statistical timing analysis for integrated circuits*

Peng Wang

*for contributions to power system reliability and hybrid AC/DC micro-grids*

Xudong Wang

*for contributions to wireless mesh networks*

Yu Wang

*for contributions to topology design and performance optimization in wireless networks*

Robert Weikle

*for contributions to millimeter-wave and submillimeter-wave electronics and instrumentation for terahertz frequencies*

Daniel Weile

*for contributions to computational electromagnetics*

Mark Weiss

*for advancements in computer science education*

Stephen Welby

*for leadership in defense and aerospace systems engineering*

Thomas Weller

*for contributions to modeling and design of passive microwave circuits and components*

Qihao Weng

*for contributions to urban remote sensing*

## 2018 Newly Elevated Fellows

David Whelan

*for leadership in space-based navigation, synchronization, and surveillance*

Jean-Pierre Wigner

*for contributions to surface modeling in passive microwave remote sensing*

James Wilkinson

*for contributions to integrated photonics*

Laurie Williams

*for contributions to reliable and secure software engineering*

Stefan Winkler

*for contributions to perceptual video quality measurement*

Philip Winston

*for development of standards in power system protection reliability*

Stephen T. Wong

*for leadership in drug discovery, systems biology, bioinformatics, and health analytics*

Rebecca Wright

*for contributions to applied cryptography and privacy*

Shien-Yang Wu

*for leadership in CMOS process integration*

Huikai Xie

*for contributions to micro-electromechanical optical scanning systems*

Tao Xie

*for contributions to software testing and analytics*

Hao Xin

*for contributions to electromagnetic metamaterials and 3D printing of metamaterial structures*

Dong Xu

*for contributions to recognition and retrieval of multimedia and biometric data*

Jianbin Xu

*for contributions to nanoscale electronic materials and devices*

## 2018 Newly Elevated Fellows

Yang Yang

*for contributions and leadership in wireless access and networking*

Anthony Yen

*for leadership in extreme-ultraviolet lithography for high volume manufacture of integrated circuits*

Dong Yu

*for contributions to context-dependent automatic speech recognition*

Richard Yu

*for contributions to mobility management and radio resource allocation in mobile wireless networks*

Habib Zaidi

*for contributions to quantitative multimodality molecular imaging*

Changshui Zhang

*for contributions to semi-supervised learning for signal processing*

Lei Zhang

*for contributions to sparsity-based image modeling and perceptual image quality assessment*

Yanyong Zhang

*for contributions to robust and efficient large-scale sensor networks*

Zhensheng Zhang

*for contributions to wireless ad-hoc and optical networks*

Zhengming Zhao

*for contributions to electromagnetic transient analysis and control of high-voltage high-power electronics conversion*

Tong Zhou

*for contributions to robust identification and estimation of control systems*

Xiaofang Zhou

*for advancements in database query processing*

Peiyong Zhu

*for leadership in wireless communications systems*

Thomas Zwick

*for contributions to millimeter wave transceivers*