

Spring 2019



UC SANTA BARBARA
Computer Science
College of Engineering

table of contents

Message from the Chair2

New Faculty

Daniel Lokshтанov..... 3

Lingqi Yan..... 4

Arpit Gupta..... 5

Yu Feng..... 6

Yekaterina Kharitonova..... 7

CS Summit 20188

End of Year Awards9

Faculty Awards & Honors.....10

Elizabeth Belding

Tobias Hollerer

Linda Petzold

Rachel Lin

Diba Mirza

Giovanni Vigna

William Wang

Rich Wolski

Paper & Demo Awards11

Featured Article15

MESSAGE

FROM THE CHAIR



Dear Alumni and Friends of UCSB Computer Science,

During the past year, the field of Computer Science has continued to grow in importance, impact, and demand, creating seemingly limitless opportunities for our graduates and a continued sense of excitement in the department about changing the world through our research and teaching. Nationwide, the number of CS Bachelor's degrees has been increasing rapidly in the past decade, including double-digit growth for the past four years. The number of students applying to UCSB Computer Science as freshmen has increased dramatically, from 651 in 2009 to 7420 in 2018, while all measures of student quality have soared. We are at all-time highs in the department in the numbers of undergraduates, graduate students, faculty, and staff.

Most importantly, the need for CS graduates and their expertise is skyrocketing, and our highly sought-after graduates are becoming major contributors and leaders in industry, government, startups, and academia.

We were excited to hire several new faculty in the past year who bring world-class research efforts and pedagogical skills to the department: Daniel Lokshtanov (from the University of Bergen in Norway) [CS theory], Lingqi Yan (from UC Berkeley) [computer graphics], Kate Kharitonova (from Harvey Mudd College) [teaching faculty], Yu Feng (from UT Austin via the University of Washington) [programming languages], and Arpit Gupta (Princeton University via Columbia University) [computer systems]. These highly accomplished new colleagues complement nicely our existing department research strengths and bring fresh perspectives and energy to our students by their teaching and mentoring. Meanwhile, our stellar faculty continue to receive major honors, awards, and acknowledgements for their many achievements.

Our annual CS Summit event was held on March 16, 2018, and once again it showcased department highlights, such as undergraduate Capstone projects and graduate research, and culminated in a captivating keynote talk by David Culler, the Dean of the Division of Data Sciences at UC Berkeley. The next CS Summit will be held on Wednesday, March 13, 2019, and you are invited to come and see what's going on in CS at UCSB and to interact with the department's students, faculty, alumni, and friends.

As always, we welcome your continued involvement in the Department of Computer Science. Let's stay in touch!

A handwritten signature in blue ink that reads "Matthew A. Turk". The signature is fluid and cursive, with the first name being the most prominent.

Matthew Turk
Professor and Chair

New Faculty: Daniel Lokshтанov



Q: Can you tell us a little bit about your background?

A: I was born in Moscow, Russia, and moved to Norway when I was 6 years old. I lived in Norway since then, except for a one year exchange in Canada during

my undergrad studies, and a two year postdoc in San Diego. I met my wife-to-be in San Diego and got her to move to Norway with me. You can take a California girl out of California, but you can't take California out of the girl. So, a few years later, here we are!

Q: Tell us about your research.

A: I do research on algorithms – poetically they are the heart and soul of computer programs. Google says that an algorithm is “a process or set of rules to be followed in calculations or other problem-solving operations, especially by a computer.” What I do is that I try to make them as efficient as possible – basically there are many ways for a computer to do the same thing, and I try to make the computer do the things it is supposed to do as efficiently (fast) as possible. There's lots of math involved. If you've ever seen the show Numbers, I aspire to be that guy.

Q: Are there any memorable moments in your academic career so far?

A: There is one where I solved a problem that had been open for a while, and I had been pondering about it on and off for a few years. And here I found myself on the back row of a lecture hall, zoning out during a talk, thinking about this problem instead of listening to the talk. And then, out of the blue I have this really simple idea and all of the pieces just fit into place and I'm pretty sure the problem has been solved! In the break between this talk and the next one I was pacing back and forth in the break room going over the details in my head again and again, probably talking to myself. I must have looked like a complete lunatic, even in a room full of mathematicians! But I did not care one bit because it totally seemed like the problem had been defeated (it had!).

Q: Why UCSB? What's your first impression of this campus and the department?

A: I mean it's pretty hard to beat Santa Barbara. Other than the real estate prices, this is pretty much as good as it gets. The university is awesome, the colleagues are super welcoming and friendly, and the more I learn about them the more I realize how impressed with everyone around me I should be at all times (pretty damn impressed, if you ask me!)

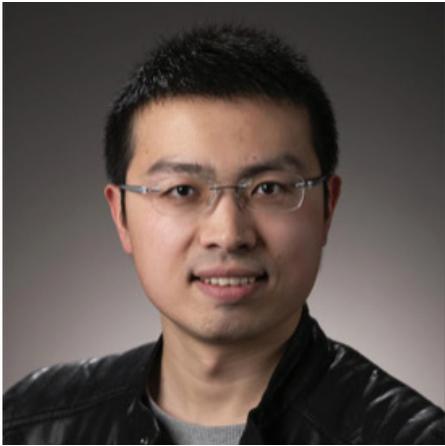
Q: What do you do in your spare time?

A: What spare time? My son just turned 1 year old. I fall asleep at 9pm totally exhausted, hoping my wife will do the dishes even though I was supposed to. She does. Ask me again in 2 years.

Q: Do you like Santa Barbara so far?

A: Yes! I've done a tiny bit of hiking around here (see question above wrt. why I haven't checked out all of the peaks yet) and it is so pretty! Can't wait to do more!

New Faculty: Lingqi Yan



Q: Can you tell us a little bit about your background?

A: I am a Chinese male. Before joining UCSB as an Assistant Professor, I received my Ph.D. degree from UC Berkeley, but was advised

remotely by my advisor from UC San Diego. My wife got her master's degree from UC Santa Cruz. So we are kind of a UC family.

Q: Tell us about your research.

A: My research is in Computer Graphics, mainly aimed at rendering photo-realistic visual appearance at real world complexity, and building theoretical foundations mathematically and physically to reveal the principles of the visual world.

Q: Are there any memorable moments in your academic career so far?

A: In the final semester at UC Berkeley during my Ph.D., I was told that I've been granted C.V. Ramamoorthy Distinguished Research Award for "outstanding contributions to a new research area". But I didn't even know I was nominated. Besides, I thought my advisor played me because his name just happened to be the same as the award's. I remember the moment just because it's interesting, however, I expect to have more memorable moments here in the near future because they are epic.

Q: Why UCSB? What's your first impression of this campus and the department?

A: Previously, because UCSB gave me an unexpected opportunity and UCSB is the best university location-wise. Now, because UCSB is home. It's a place that respects me and my research and makes me feel comfortable working here. My first impression is that the campus is so beautiful and people from the department are both kind and awesome.

Q: What do you do in your spare time?

A: I play piano and video games. (Official answer: What is spare time?)

Q: Do you like Santa Barbara so far?

A: Yes. I would especially mention that SB downtown is the best downtown I've ever seen. One important reason is that there's always public parking available, and at almost no cost.

New Faculty: Arpit Gupta



Q: Can you tell us a little bit about your background?

A: I grew up in Bhopal, a beautiful city surrounded by lakes in central India. I received my bachelor's degree from Indian

Institute of Technology, Roorkee (IITR), master's from NC State University (NCSU), and Ph.D. from Princeton University.

Q: Tell us about your research?

A: Broadly speaking, my research area lies at the intersection of networking, security, and machine learning. More concretely, my research centers around the question, "How can networks run themselves?". In recent years, with the proliferation of networked devices (e.g., IoTs) and applications (e.g., augmented or virtual reality), the complexity of managing networks at scale has increased significantly. Conventional network-management tools and practices, centered around human network operators, are ill-suited to handle this increased complexity. The goal of my research is to design and build systems that enable self-driving networks.

Q: Are there any memorable moments in your academic career so far?

A: I want to share two such moments. First, after finishing my undergraduate studies, I wasn't sure what's next for me. I took a high-paying job of a security consultant at an auditing firm. Within a few days, I realized that it wasn't my calling. Though leaving a well-paid corporate job was a social taboo, I decided to work as a project assistant at the Indian Institute of Science (IISc). Needless to say, the experience was blissful, and it made me realize what I really want to do in my life. Second,

after publishing the paper on software-defined IXPs (SDXs) at SIGCOMM, I spent a lot of time iterating and improving the system. I was driven to make a real-world impact with my research, and these extra efforts came at the cost of reduced research productivity (i.e., number of publications). However, getting the "community award" at USENIX NSDI, reinforced my belief that academia values my style of research, and bolstered my resolve to become a professor.

Q: Why UCSB? What's your first impression of this campus and the department?

A: During my graduate studies, I followed the works of a few UCSB professors and interacted with their students. This created an image of UCSB as a place with a top quality CS program. I was thrilled to receive the invitation for the job interview. During my visit, I noticed the family-like warmth in the department. It was clear how much faculty here care about the growth and development of their colleagues and students. I also realized that all the stories about the mythical beauty of UCSB's campus were true, and I could see how I could pursue top quality research here without compromising on the quality of life.

Q: What do you do in your spare time?

A: Unsurprisingly, being from India, I love both watching and playing cricket. I especially enjoy following test cricket, a format of cricket which is played for five days and requires a combination of skills and strategy for winning. I also do road biking. It has been a seasonal activity for me so far. I am hoping to log more miles when I move to Santa Barbara, later this year.

New Faculty: Yu Feng



Q: Can you tell us a little bit about your background?

A: I grew up in a small city in southern China. Then I moved to Beijing when pursuing my master degree and lived there most of my

life. I started my Ph.D. in Virginia where I met my advisor, then we moved to California in 2013, and finally I managed to obtain my Ph.D. degree at UT Austin in 2018.

Q: Tell us about your research?

A: My main research area is programming languages, in particular, in program synthesis and verification. I enjoy using rigorous logical reasoning to verify and ensure the robustness of existing systems, as well as synthesize complex programs based on formal (e.g., logical formulas) or informal specifications. One compelling domain I have been exploring is program synthesis for data science. On the one hand, AI and deep learning techniques are revolutionizing our society. On the other hand, most of data scientists still spend more than 80% of their time doing tedious and repetitive tasks such as data cleaning, transformation, and visualization. The Neo framework, which is a general-purpose synthesizer that I have been maintaining, can automate those tasks using informal specifications that are easy to specify by the users, including input-output examples, natural language, and demonstration.

Q: Are there any memorable moments in your academic career so far?

A: There are so many memorable moments. In 2012, I met my advisor Isil, who is also one of my best friends in my academic career. In 2014, I married my wife Lijuan, who has been supportive throughout my Ph.D. In 2016, my papers had five rejections streak and I learned to keep smiling when life was tough. 2018 was a fruitful year: I got my academic job at UCSB, first best paper award at PLDI, and most importantly, my baby boy Byron.

Q: Why UCSB? What's your first impression of this campus and the department?

A: The UCSB campus is the most beautiful one that I have visited and you can literally walk from the Computer Science department to the beach within a few minutes. Beside my main research (PL), I also do interdisciplinary research on security, software engineering, and machine learning. Not surprisingly, in the Computer Science department, you can find the best researchers in those areas. In the meantime, I was amazed by the collaborative atmosphere among the faculty members at UCSB and there are so many interdisciplinary opportunities I can explore in the near future.

Q: What do you do in your spare time?

A: Soccer is my favorite sport and I have been playing it since middle school. Nowadays I still work out regularly, and I enjoy swimming and running every week. This summer I will attend the Road Ragnar event and we will run from the border of Canada to Seattle within three days!

Q: Do you like Santa Barbara so far?

A: Absolutely. I love seafood and beach, and Santa Barbara has both of them! What impressed me the most is the people in Santa Barbara. Everyone seems to be extremely happy and friendly.

New Faculty: Yekaterina "Kate" Kharitonova



Q: Can you tell us a little bit about your background?

I received my B.S. in Computer Science from the University of Hawaii-Hilo, followed by a Ph.D. in Computer Science from

the University of Arizona. I spent two years as a visiting professor at Harvey Mudd College before joining UCSB in 2018.

Q: Tell us about your research.

Prior to joining UCSB, my research was in Computer Vision and Machine Learning, specifically focusing on educational technologies. Now that I am on the teaching track, my primary interests lie in integrating effective teaching practices and tools into the curriculum, developing the Data Science program, and introducing students to open source software and good software development practices. I am also passionate about supporting and empowering students, and I look forward to creating projects that benefit them.

Q: What are the courses that you are going to teach in Fall and the upcoming quarters?

A: This Fall, I will be teaching the Data Science Foundations course (currently, INT 5), which I developed at UCSB last year. It will also be my first time teaching CS 8: Introduction to Computer Science (in Python). In the Winter, I will again teach CS 16: Problem Solving with Computers I (in C++). Spring brings an exciting opportunity to team-teach an intermediate Data Science course (currently, INT 15), which I co-created this Spring with my colleague from the PSTAT department, Alexander Franks.

Q: Why UCSB? What's your first impression of this campus and the department?

I chose UCSB because of my wonderful interactions with people: I really enjoyed talking with students, and I loved how welcoming, respectful, and supportive everyone was. I really value our department's focus on undergraduate education and its willingness to bring positive changes to the curriculum. UCSB has a wonderful teaching-track team, and my discussions with Phil, Diba, and Richert were really exciting because of the potential impact our work can have on the department and the campus. Having such a positive and encouraging community and mentors who are dedicated to my growth and success is what convinced me that UCSB is the right place for me.

Q: What do you do in your spare time?

I have not had much "spare time" in my first year as a UCSB professor. However, whenever I'm not creating new course materials or preparing lectures, I like to read and listen to podcasts. I also practice yoga and love to dance and hula-hoop. I'm hoping to finish building a classical guitar, so that I can start learning how to play it. As an avid hiker and a backpacker, I'm really looking forward to traveling and exploring new trails.

Q: Do you like Santa Barbara so far?

Santa Barbara is a beautiful place with lovely sunsets. I love the nature and our proximity to the ocean. Seeing students sunbathing on the lawns on campus reminds me of my undergrad time in Hawaii. I recently started riding my bike and taking the Obern trail to campus feels like riding in the backcountry (I also love the really awesome weather that makes these rides such a pleasant experience). I look forward to exploring the city and adding more things-to-do to my list that currently includes farmers markets and the downtown Art Walk on the weekends.

CS Summit 2018: A Conversation about Data Science

CS Summit at UCSB's Department of Computer Science was held on Friday, 03/16/18, at the Corwin Pavilion.

This year's event included breakfast with industry and networking; undergraduate capstone presentations; lunch with poster session and networking; graduate student distinguished lectures; a distinguished lecture, and a fireside chat with Dr. David Culler.

The Distinguished Lecture, titled "Networked Systems Design for Sustainability in the Built Environment", was delivered by David Culler from UC Berkeley. In this talk, Dr. Culler drew the connection between his system research and sustainability and outlined the challenges in the area of interdisciplinary data science. Specifically, Dr. Culler described Brick, a system that combines entities and relations about building sensors, and how it may help conserve energy. The talk was followed by a fireside chat between Dr. Culler and Dr. Rachel Lin, where Dr. Culler recounted his memories of UCSB, and how the Computer Science Research at UCSB was established by Dr. Glen Culler.

David Culler is the Friesen Professor of Computer Science and has been a member of UC Berkeley's EECS faculty since 1989. His research addresses the extremes of networked systems. His early work on high-performance clusters, including Berkeley Network of Workstation (NOW) Project and PlanetLab, laid foundations for today's cloud. His research on embedded wireless sensor networks, including the Berkeley Motes, TinyOS, and 6LoWPAN, shaped the Internet of Things. He is currently focused on creating robust, secure network systems infrastructure for cyberphysical systems and its data analytics, including energy efficient buildings, smart grids, and sustainable transportation. David won the Okawa Prize in 2013 and is a member of the National Academy of Engineering, an ACM

Fellow, and an IEEE Fellow. He was named one of Scientific American's Top 50 Researchers and the creator of one of MIT's Technology Review's "10 Technologies that Will Change the World."



David Cutler

The recorded CS Summit 2018 video can be viewed at:

<https://www.youtube.com/watch?v=6AsQZEqmdi0>

Summit 2019 was held Wednesday, March 13, 2019.

Video can be viewed at:

<https://youtu.be/8Zm0Nin32YA>

The First

Department of Computer Science End of Year Awards Ceremony



On June 15th, 2018, the Department held its first End of the Year Awards Ceremony. We celebrated the wonderful accomplishments of our students, staff, and faculty acknowledging honor students, staff and faculty who have received campus or external awards throughout the academic year. Highlights included new awards to Graduate and Undergraduate students, as well as our very first Distinguished Alumnus awards for undergraduate and graduate alumni.

The Distinguished Alumnus awards went to Randy Modos - Class of '02, who is now the president and founder of PayJunction, a company that processes over 4 billion dollars of payments annually, and to Prof. Gustavo Alonso, class of '94, who is now a Professor of Computer Science at ETH Zürich, widely recognized for his work on systems, and fellow of the ACM and of the IEEE.

The End of the Year Awards Ceremony (and the following reception) was a great success, and will return in 2019.

Faculty Awards & Honors



Elizabeth Belding

ACM SIGMOBILE Test of Time Award

N2Women Stars in Networking & Communication Award



Tobias Hollerer

Early Innovator Award at IEEE ISWC/Ubicomp Joint Conference



Rachel Lin

Best Paper Award at Eurocrypt



Diba Mirza

Northrup Grumman Excellence in Teaching Award



William Wang

Adobe Faculty Research Award

IBM Faculty Award



Giovanni Vigna

IEEE Fellow



Rich Wolski

Duval Family Presidential Chair in Energy Efficiency



Linda Petzold

Mehrabian Endowed Chair in College of Engineering

Paper & Demo Awards



**Ph.D. students Victory Zakhary and Cetin Sahin,
and Profs. Amr El Abbadi, Rachel Lin and Stefano Tessaro**

Best Demo at the International Conference on
Extending Database Technology



**Ph.D. students Victor Zakhary, Theodore Georgiou,
Cetin Sahin and Prof. Amr El Abbadi**

2nd Best Vision Award at the International Conference
on Advances in Geographic Information Systems
(SIGSPATIAL)



**Students Joseph McMahan, Michael Christensen, Lawton Nichols,
Jared Roesch, Sung-Yee Guo and Profs. Hardekopf and Sherwood**

•IEEE Micro "Top Pick" Award



Dr. John O'Donovan

•GLOBECOM 2017 Best Paper Award



Ph.D. student Weilong Cui and Prof. Tim Sherwood

•IEEE Micro "Top Pick" Award



Distinguished Graduate Lecturers (presented at summit.cs)



1st Place - Yu Su

Title: Bridging the Gap Between
Human and Data
AI Advisor: Xifeng Yan



2nd Place - Jędrzej Kęzerański

Title: What does "similar" mean?
Advisors: Matthew Turk &
Tobias Hollerer



3rd Place - Neeraj Kumar

Title: Geometric Shortest Paths
Advisor: Subhash Suri

Outstanding Teaching Assistant Award (presented at award ceremony)



Mohammad Amiri



Sourav Medya



William Eiers

Outstanding Publication Award (presented at award ceremony)

Binyi Chen

Paper Title: SCRIPT IS MAXIMALLY MEMORY HARD

Publication Venue: EUROCRYPT'17

Co-Authors: Joel Alwen, Krzysztof Piertzak, Leonid Reyzin and Stefano Tessaro



ABSTRACT: This paper focuses on script, a simple candidate MHF designed by Percival, and described in RFC 7914. It has been used within a number of cryptocurrencies (e.g., Litecoin and Dogecoin) and has been an inspiration for Argon2d, one of the winners of the recent password-hashing competition. Despite its popularity, no rigorous lower bounds on its memory complexity are known. We prove that script is optimally memory-hard, i.e., its cumulative memory complexity (cmc) in the parallel random oracle model is $\Omega(n2w)$, where w and n are the output length and number of invocations of the underlying hash function, respectively. High cmc is a strong security target for MHFs introduced by Alwen and Serbinenko (STOC '15) which implies high memory cost even for adversaries who can amortize the cost over many evaluations and evaluate the underlying hash functions many times in parallel.

Our proof is the first showing optimal memory-hardness for any MHF. Our result improves both quantitatively and qualitatively upon the recent work by Alwen et al. (EUROCRYPT '16) who proved a weaker lower bound of $\Omega(n2w/\log 2 n)$ for a restricted class of adversaries.

Outstanding Graduate Student Award

Veronika Strnadova-Neeley

Veronika received her BS in Applied Mathematics (summa cum laude) in 2010 from the University of New Mexico. She is a member of the Combinatorial Scientific Computing Laboratory at UCSB, where her research has focused on clustering and ranking of large-scale data. Her genomic clustering algorithms were part of the 2015 publication of the "grand challenge" genome of Wheat. Veronika was a 2015 MIT EE/CS "Rising Star." She held numerous roles in student leadership UCSB, including as co-president of WiCS. She has also played soccer both for the UNM Division I women's team and for the Czech Republic women's national team. Veronika defended her PhD thesis in May 2018, and will join the Gianforte School of Computing at Montana State University as an Assistant Professor in August.



Outstanding Dissertation Award

Faisal Nawab



Dissertation Title: Large scale data management and analysis in cloud computing environments
Advisors: Divyakant Agrawal and Amr El Abbadi
Prof. Nawab is currently an assistant Professor at UC Santa Cruz in the Department of Computer Science. His research lies at the intersection of Big Data Management and distributed Cloud Computing Systems. Specifically, he works on data management systems that accelerate and support data science and global connectivity, especially in the context of autonomous, mobile applications and the Internet of Things.

Distinction in the Major

Krassi Djonev, Jimmy Le,
Caitlin Scarberry,
Davina Zamazadeh
(left to right)



Capstone (presented at summit.cs)



1st Place Stage Presence

Ryan Allen, Isaih Egan, Zach Feinn, Ryan Kemper, Josue Montenegro

Project Overview: Stage Presence is the first choice solution for people of all backgrounds who want to deliver flawless and powerful presentations.
Mentors: Nicolay Avrionov, Christfried Focke, Nilesh Mishra, John Spann
Partner: LogMeIn

2nd Place



Schrute Farms

Names: Michael Caccamo, Yuki Mano, Kunal Naik, Jonathan Segovia, Tristan Starck

Project Overview: Virtual Assistant that will allow customers to set up appointments over the phone without actually needing to talk to anyone, thus allowing small businesses to streamline their appointment process.

Mentors: Mike Weaver & Peter Wilson

Partner: Invoca

3rd Place



Not Our (Seg) Fault

Names: William Bennett, Ashlynn Cardoso, Clara Frausto, Caitlin Scarberry, Alex Wein

Project Overview: Keyboard biometric system for authentication.

Mentors: Alex Harrell & Renato Untalan

Partner: Novacoast



COE Outstanding CS Senior Award

Davina Zamanzadeh

Outstanding Undergraduate Research Awards

Andy Rosales-Elias & Thomas Schibler



CS Students of the Year

Sierra Schwellenbach & Shreyas Canchi Radhakrishna



Outstanding Mentors of the Year

Steven Fields, Sean Shelton, Shreyas Canchi Radhakrishna, Sayali Kakade





congratulations

to all the award-winning,
hardworking students,
staff and faculty!

A portrait of Linda Petzold, a woman with long brown hair, wearing a dark blazer over a patterned scarf. She is smiling slightly and looking directly at the camera. The background is a blurred outdoor scene with green foliage.

Linda Petzold Recognized for Contributions on Multiple Levels

Tuesday, December 18, 2018

Congratulations to Linda Petzold, professor in the Computer Science and Mechanical Engineering Departments in the UC Santa Barbara College of Engineering, who in November received the 2018 IEEE Computer Society Sidney Fernbach Award.

Established in 1992 in memory of high-performance computing pioneer Sidney Fernbach, this award is one of the IEEE Computer Society's most prestigious, recognizing outstanding contributions in using innovative approaches in the application of high-performance computers. The IEEE cited Petzold for her "pioneering contributions to numerical methods and software for differential-algebraic systems and for discrete stochastic simulation."

Petzold's recent research has focused on modeling, simulation, and analysis of multiscale systems in materials, biology, and medicine.

She is best known for her pioneering work on the numerical solution of differential algebraic equations (DAEs). DAEs arise in the simulation of physical systems that involve nonlinear constraints, such as mechanical systems, electrical networks, power systems, the flow of incompressible fluids, and many others.

Differential equations, which mathematically describe movement and interaction, are often applied to aggregates of things. "A baseball moving through space, for instance, is made up of huge numbers of molecules that, together, exhibit coherent movement. Newton's laws of motion, which comprise differential equations, very accurately describe that," Petzold explains. "But at smaller scales, like the scale of cells in biology, there are far fewer molecules, and some of them are present in very small quantities. Sometimes, these molecules are involved in making key decisions, so where they are and what they're doing can have a big impact."

To capture some cellular processes, it is necessary to simulate them on a much finer, molecule-by-molecule, scale, than is possible with differential equations. "

Petzold's impact has been enhanced by the fact that she develops not only theory for the numerical solution of differential-algebraic equations and for discrete stochastic simulation, but also the software tools that enable its use in computer simulation. She created the DASSL software, which stands for "Differential Algebraic System Solver Sandia Livermore," at Sandia National Labs shortly after earning her PhD. She also developed its successor, DASPK, for the numerical solution of large-scale DAE systems. Both software systems are widely used throughout science, engineering, and technology. She and her UCSB PhD students and postdocs in the Computational Science and Engineering Research Group developed, in collaboration with Professor Chandra Krintz of the Computer Science Department, a cloud-based development environment called StochSS (Stochastic Simulation Service), for modeling and simulating biological processes.

Being recognized both for her theoretical work and software development, she says, is what makes the Fernbach Award so special. "This award is from the computational-science community. It's my home community, the area in which my PhD work was done," she says. "And it recognizes my passion for developing infrastructure [software]."

In university settings, she explains, researchers tend to be incentivized more strongly to write papers than to take an idea from concept to impact. Papers are usually recognized more than software, whereas the software, which is based on the computational mathematics introduced in the papers, usually has more impact. "Software contributions are not always recognized, although they require a tremendous amount

of both work and expertise. I appreciate that this award recognizes both my computational-mathematics research and the software based on that research which enables it to have an impact in science and engineering."

Petzold is currently the Mehrabian Distinguished Professor in the Departments of Mechanical Engineering and Computer Science, and director of the Computational Science and Engineering Graduate Emphasis at UC Santa Barbara. She is a member of the US National Academy of Engineering and a Fellow of the Association for Computing Machinery (ACM), the American Society of Mechanical Engineers (ASME), the Society for Industrial and Applied Mechanics (SIAM), and the American Association for the Advancement of Science (AAAS). Named the UCSB Faculty Research Lecturer for 2011, Petzold was awarded the SIAM/ACM Prize for Computational Science and Engineering in 2013, received an Honorary Doctorate from Uppsala University in 2015, and was awarded the SIAM Prize for Distinguished Service in 2016.

The Sidney Fernbach award was presented to Petzold at the 2018 International Conference for High Performance Computing, Networking, Storage, and Analysis (SC18) Conference in Dallas, Texas, on November 13, 2018.

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