**Zhengqi, Gao**

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Address: Room 39-328, 60 Vassar Street, Cambridge, MA 02139, USA

**Education**

**Massachusetts Institute of Technology** Cambridge, USA

*Ph.D. in Electrical Engineering and Computer Science* Sep 2021 – May 2026 (Expected)

* GPA: 5.00/5.00 (Rank: N/A); supervised by Prof. Duane S. Boning
* Research interests: design automation for electronic-photonic integrated circuits, and machine learning

**Fudan University** Shanghai, China

*M.S. in Microelectronics and Solid State Electronics* Sep 2018 – Jun 2021

* GPA: 3.82/4.00 (Rank: N/A); worked with Prof. Jun Tao and Prof. Xin Li (Duke Univ.)
* Research interests: electronic design automation (EDA), Bayesian methods, and machine learning

*B.E. in Microelectronic Science and Engineering* Sep 2014 – Jun 2018

* GPA: 3.84/4.00 (Rank: 4/71); selected to Elite Engineering Program (top 5%)
* Relevant coursework: Mathematical Analysis, Probability, Mathematical Statistics and Stochastic Process, Signal and System, Data Structure and Algorithm Design, Design of Analog Integrated Circuits

**Selected Publications**

**Machine Learning**

1. K. Zha**\***, **Z. Gao\***, M. Shen, Z.-W. Hong, D. S. Boning, and D. Katabi, “RL Tango: Reinforcing Generator and Verifier Together for Language Reasoning,” *Arxiv Preprint*, 2025. [[PDF](https://arxiv.org/pdf/2505.15034)][[Code](https://github.com/kaiwenzha/rl-tango)] (\*Equal Contribution)
2. **Z. Gao**, K. Zha, T. Zhang, Z. Xue, D. S. Boning, “REG: Rectified Gradient Guidance for Conditional Diffusion Models,” *International Conference on Machine Learning* (*ICML*), 2025. [[PDF](https://arxiv.org/abs/2501.18865)][[Code](https://github.com/zhengqigao/REG)]
3. S. Zheng\*, **Z. Gao\***, F.-K. Sun, D. S. Boning, B. Yu, M. Wong, “Improving Neural ODE Training with Temporal Adaptive Batch Normalization,” *Conference on Neural Information Processing Systems* (*Neurips*), 2024. [[PDF](https://proceedings.neurips.cc/paper_files/paper/2024/file/adf7fa39d65e2983d724ff7da57f00ac-Paper-Conference.pdf)][[Code](https://github.com/shelljane/tabn-neuralode)] (\*equal contribution)
4. H. Lin, C. Liu, C. Xu, **Z. Gao**, Yanwei Fu, Yuan Yao, “On the Theory of Cross-Modality Distillation with Contrastive Learning,” *International Conference on Learning Representations* *BGPT workshop*, 2024. [[PDF](https://openreview.net/forum?id=5jWaN6AplJ&referrer=%5BAuthor%20Console%5D(%2Fgroup%3Fid%3DICLR.cc%2F2024%2FWorkshop%2FBGPT%2FAuthors%23your-submissions))]
5. C.-Y. Lai, F.-K. Sun, **Z. Gao**, J. Lang, and D. S. Boning, “Nominality Score Conditioned Time Series Anomaly Detection by Point/Sequential Reconstruction,” *Conference on Neural Information Processing Systems* (*Neurips*), 2023. [[PDF](https://arxiv.org/pdf/2310.15416.pdf)][[Code](https://github.com/andrewlai61616/NPSR)]
6. Z. Xue\*, **Z. Gao**\*, S. Ren\*, and H. Zhao, “The Modality Focusing Hypothesis: Towards Understanding Crossmodal Knowledge Distillation,” *International Conference on Learning Representations* (*ICLR)*, 2023. [[PDF](https://arxiv.org/pdf/2206.06487.pdf)] [[Code](https://github.com/zihuixue/MFH)] (\*Equal Contribution, ICLR Spotlight)
7. **Z. Gao**, F. Sun, M. Yang, S. Ren, Z. Xiong, M. Engeler, A. Burazer, L. Wildling, L. Daniel, and D. S. Boning “Learning from Multiple Annotator Noisy Labels via Sample-wise Label Fusion,” *European Conference on Computer Vision* (*ECCV*), 2022*.* [[PDF](https://arxiv.org/abs/2207.11327)] [[Code](https://github.com/zhengqigao/Learning-from-Multiple-Annotator-Noisy-Labels)]
8. J. Gu, **Z. Gao**, C. Feng, H. Zhu, R. T. Chen, D. S. Boning, and D. Z. Pan, “NeurOLight: A Physics-Agnostic Neural Operator Enabling Parametric Photonic Device Simulation,” *Conference on Neural Information Processing Systems* (*Neurips*), 2022. [[PDF](https://arxiv.org/abs/2209.10098)] [[Code](https://github.com/JeremieMelo/NeurOLight)]
9. S. Ren, H. Wang, **Z. Gao**, S. He, A. Yuille, Y. Zhou, and C. Xie, “A Simple Data Mixing Prior for Improving Self-Supervised Learning,” *IEEE/CVF Conference on Computer Vision and Pattern Recognition* (*CVPR*), 2022. [[PDF](https://arxiv.org/abs/2206.07692)] [[Code](https://github.com/OliverRensu/SDMP)]
10. S. Ren, **Z. Gao**, T. Hua, Z. Xue, Y. Tian, S. He and H. Zhao, “Co-Advise: Cross Inductive Bias Distillation,” *IEEE/CVF Conference on Computer Vision and Pattern Recognition* (*CVPR*), 2022. [[PDF](https://arxiv.org/pdf/2106.12378)] [[Code](https://github.com/OliverRensu/co-advise)]
11. Z. Xue, S. Ren, **Z. Gao** and H. Zhao, “Multimodal Knowledge Expansion,” *IEEE International Conference on Computer Vision (ICCV)*, 2021. [[PDF](https://arxiv.org/abs/2103.14431)] [[Code](https://github.com/zihuixue/MKE)]

**Design Automation for Electronic-Photonic Integrated Circuits**

1. P. Ma, Z. Yin, Q. Jing, **Z. Gao**, N. Gangi, B. Zhang, T.-W. Huang, Z. Huang, D. S. Boning, Y. Yao, J. Gu “SP2RINT: Spatially-Decoupled Physics-Inspired Progressive Inverse Optimization for Scalable, PDE-Constrained Meta-Optical Neural Network Training,” *Arxiv Preprint*, 2025. [[PDF](https://arxiv.org/abs/2505.18377)]
2. **Z. Gao**, J. Gu, L. Daniel, R. Rohrer, and D. S. Boning, “SPIPE: Differentiable SPICE-Level Co-Simulation Program for Integrated Photonics and Electronics,” *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems* (*IEEE TCAD*), 2025.
3. P. Ma, **Z. Gao**, M. Zhang, H. Yang, M. Ren, R. Huang, D. S. Boning, and J. Gu, “MAPS: Multi-Fidelity AI-Augmented Photonic Simulation and Inverse Design Infrastructure,” *Design, Automation & Test in Europe Conference* (*DATE*), 2025. [[PDF](https://ieeexplore.ieee.org/abstract/document/10993033)]
4. P. Ma, **Z. Gao**, A. Begovic, M. Zhang, H. Yang, M. Ren, R. Huang, D. S. Boning, and J. Gu, “BOSON−1: Understanding and Enabling Physically-Robust Photonic Inverse Design with Adaptive Variation-Aware Subspace Optimization,” *Design, Automation & Test in Europe Conference* (*DATE*), 2025. [[PDF](https://ieeexplore.ieee.org/abstract/document/10993227)]
5. P. Ma, H. Yang, **Z. Gao**, J. Gu, and D. S. Boning, “PIC2O-Sim: A Physics-Inspired Causality-Aware Dynamic Convolutional Neural Operator for Ultra-Fast Photonic Device Time-Domain Simulation,” *APL Photonics*, 2025. [[PDF](https://pubs.aip.org/aip/app/article/10/3/036104/3338201)]
6. **Z. Gao**, Z. Zhang, Z. He, J. Gu, D. Z. Pan, and D. S. Boning, “Selecting Robust Silicon Photonic Designs after Bayesian Optimization without Extra Simulations,” *Optica Express* (*OE*), 2024. [[PDF](https://opg.optica.org/directpdfaccess/091ca1ea-2720-4f37-90f3054537f40a3c_561081/oe-32-21-37585.pdf?da=1&id=561081&seq=0&mobile=no)] (Editor’s Pick)
7. **Z. Gao**, F. Sun, R. Rohrer, and D. S. Boning, “KirchhoffNet: A Scalable Ultra Fast Analog Neural Network,” *IEEE/ACM International Conference on Computer-Aided Design* (*ICCAD*), 2024 [[PDF](https://arxiv.org/pdf/2310.15872)][[Code](https://github.com/zhengqigao/kirchhoffnet/tree/main)]
8. **Z. Gao**, X. Chen, Z. Zhang, U. Chakraborty, W. Bogaerts, and D. S. Boning, “Gradient-Based Power Efficient Functional Synthesis for Programmable Photonic Circuits,” *IEEE Journal of Lightwave Technology* (*IEEE JLT*), 2024. [[PDF](https://ieeexplore.ieee.org/document/10530318)]
9. **Z. Gao**, D. Zhang, L. Daniel, and D. S. Boning, “NOFIS: Normalizing Flow for Rare Circuit Failure Analysis,” *Design Automation Conference* (*DAC*), 2024. [[PDF](https://arxiv.org/pdf/2310.19167.pdf)][[Code](https://github.com/zhengqigao/NOFIS-DAC24/tree/main)] (*MARC* 2024 Best Pitch Award)
10. **Z. Gao**, X. Chen, Z. Zhang, C. Y. Lai, U Chakraborty, W. Bogaerts, and D. S. Boning, “Provable Routing Analysis of Programmable Photonics,” *IEEE Journal of Lightwave Technology* (*IEEE JLT*), 2024. [[PDF](https://ieeexplore.ieee.org/document/10491250)]
11. **Z. Gao**, Z. Zhang, and D. S. Boning, “Few-Shot Bayesian Performance Modeling for Silicon Photonic Devices Under Process Variation,” *IEEE Journal of Lightwave Technology* (*IEEE JLT*), 2023. [[PDF](https://ieeexplore.ieee.org/abstract/document/10109764/)]
12. J. Li\*, D. Ahsanullah\*, **Z. Gao\***, and R. Rohrer, “Circuit Theory of Time Domain Adjoint Sensitivity,” *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems* (*IEEE TCAD*), 2023. [[PDF](https://ieeexplore.ieee.org/abstract/document/10138792)] (\*Equal Contribution)
13. Z. Zhang, M. Notaros, **Z. Gao**, U. Chakraborty, J. Notaros, and D. S. Boning, “Impact of Process Variations on Splitter-Tree-based Integrated Optical Phased Arrays,” *Opica Express* (*OE*), 2023. [[PDF](https://opg.optica.org/oe/viewmedia.cfm?uri=oe-31-8-12912&html=true)]
14. **Z. Gao**, X. Chen, Z. Zhang, U. Chakraborty, W. Bogaerts, and D. S. Boning, “Automatic Synthesis of Light Processing Functions for Programmable Photonics: Theory and Realization,” *Photonics Research*, 2023. [[PDF](https://opg.optica.org/prj/fulltext.cfm?uri=prj-11-4-643&id=528691)] [[Code](https://github.com/zhengqigao/BayesOpt-JLT2022)] (Editor’s Pick)
15. C. Li, C. An, **Z. Gao**, F. Yang, Y. Su and X. Zeng, “Unleashing the Power of Graph Spectral Sparsification for Power Grid Analysis via Incomplete Cholesky Factorization," *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems* (*IEEE TCAD*), 2023. [[PDF](https://ieeexplore.ieee.org/abstract/document/10024314)]
16. **Z. Gao**, X. Chen, Z. Zhang, U. Chakraborty, W. Bogaerts, and D. S. Boning “Automatic Synthesis of Light Processing Functions for Programmable Photonics,” *IEEE Photonics Conference (IEEE IPC)*, 2022. [[PDF](https://arxiv.org/abs/2208.14453)]
17. **Z. Gao**, Z. Zhang and D. S. Boning, “Automatic Synthesis of Broadband Silicon Photonic Devices via Bayesian Optimization,” *IEEE Journal of Lightwave Technology* (*IEEE JLT*), 2022. [[PDF](https://ieeexplore.ieee.org/document/9893366/)][[Code](https://github.com/zhengqigao/BayesOpt-JLT2022)]
18. **Z. Gao**, Z. Zhang and D. S. Boning, “Automatic Design of a Broadband Directional Coupler via Bayesian Optimization,” *Conference on Lasers and Electro-Optics* (*CLEO*), 2022. [[PDF](https://opg.optica.org/abstract.cfm?uri=CLEO_SI-2022-JW3B.156)]
19. Z. Liang, H. Wang, J. Cheng, Y. Ding, H. Ren, **Z. Gao**, Z. Hu, D. S. Boning, X. Qian, S. Han, W. Jiang, and Y. Shi, “Variational Quantum Pulse Learning,” *IEEE International Conference on Quantum Computing and Engineering* (*IEEE QCE*), 2022. [[PDF](https://arxiv.org/abs/2203.17267)]
20. **Z. Gao** and R. Rohrer, “Efficient Non-Monte-Carlo Yield Estimation,” *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems* (*IEEE TCAD*), 2021. [[PDF](https://ieeexplore.ieee.org/document/9428031)]
21. **Z. Gao**, J. Tao, Y. Su, D. Zhou, X. Zeng and X. Li, “Fast Statistical Analysis of Rare Failure Events with Truncated Normal Distribution in High-Dimensional Variation Space,” *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems* (*IEEE TCAD*), 2021. [[PDF](https://ieeexplore.ieee.org/document/9383808)]
22. **Z. Gao**, Z. Chen, J. Tao, Y. Sun, D. Zhou, and X. Zeng, “Bayesian Inference on Introduced General Region: An Efficient Parametric Yield Estimation Method for Integrated Circuits,” *ACM/IEEE* *Asia and South Pacific Design Automation Conference* (*ASPDAC*), 2021. [[PDF](https://ieeexplore.ieee.org/document/9371605)]
23. **Z. Gao**, J. Tao, D. Zhou, X. Zeng and X. Li, “Efficient Rare Failure Analysis over Multiple Corners via Correlated Bayesian Inference,” *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems* (*IEEE TCAD*), 2020. [[PDF](https://ieeexplore.ieee.org/document/8883237)] [[Code](https://github.com/zhengqigao/multi-corner-failure-rate-estimation)]
24. **Z. Gao**, J. Tao, D. Zhou and X. Zeng, “Efficient Parametric Yield Estimation over Multiple Process Corners via Bayesian Inference Based on Bernoulli Distribution,” *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems* (*IEEE TCAD*), 2020. [[PDF](https://ieeexplore.ieee.org/document/8832253)] [[Code](https://github.com/zhengqigao/multi-corner-yield-estimation)]
25. Y. Li, X. Zeng, **Z. Gao**, L. Lin, J. Tao, J. Han, X. Cheng, M. Tahoori and X. Zeng, “Exploring A Bayesian Optimization Framework Compatible with Digital Standard Flow for Soft-Error-Tolerant Circuit,” *IEEE/ACM* *Design Automation Conference* (*DAC*), 2020. [[PDF](https://ieeexplore.ieee.org/document/9218696)]
26. **Z. Gao**, J. Tao, F. Yang, Y. Su, D. Zhou and X. Zeng, “Efficient Performance Trade-Off Modeling for Analog Circuit Based on Bayesian Neural Network,” *IEEE/ACM* *International Conference on Computer Aided Design* (*ICCAD*), 2019. [[PDF](https://ieeexplore.ieee.org/document/8942174)]

**Professional Experience**

**Massachusetts Institute of Technology** Cambridge, USA

*Research Assistant, Supervisor: Prof. Duane S. Boning* Sep 2021 – May 2026 (expected)

* Created SPIPE, the first differentiable co-simulator for electronic–photonic systems.
* Developed automatic synthesis for programmable photonic circuits, highlighted by Photonic Research 2023.
* Applied Bayesian optimization and neural operators to optimize and model silicon photonic devices under fabrication variations, highlighted by Optica Express 2024.
* Co-designed and prototyped KirchhoffNet, a hardware accelerator for ODE-based generative models, demonstrating sub-nanosecond latency and high energy efficiency, awarded MLSys rising star 2024.

**Apple Inc.** Sunnyvale, USA

*AR/VR Hardware Engineering Intern, Manager: Dr. Sheng Zhang* May 2025 – Aug 2025

* Designed an Autoencoder to compensate for display artifacts due to pupil movement
* Compressed the model by 15× and reduced runtime to 10% of the original without performance loss, enabling efficient on-device execution; deployed in the next-generation VisionPro.
* Developed an LLM-based automated test case generation pipeline for display algorithms, reducing manual inspection effort by 10× and improving bug detection efficiency.

**Nvidia Corporation** Austin, USA

*Research Intern, Manager: Dr. Mark H. Ren* Jun 2023 – Sep 2023

* Developed deep neural network model for semiconductor lithography
* Produced a large-scale image translation model (> 1B) based on Pixel2Pixel and model compression technique
* Achieved <0.02% MSE error on Nvidia proprietary chip layout dataset containing over 3M images

**Shanghai Qizhi AI Institute** Shanghai, China

*Research Intern, Mentor: Prof. Hang Zhao (Tsinghua Univ.)* Mar 2021 – Jun 2021

* Exploited multimodal learning and knowledge distillation
* Developed the modality focusing hypothesis (MFH), spotlighted at ICLR’23

**Southern Methodist University** Remotely

*Research Assistant, Supervisor: Prof. Ron Rohrer* May 2020 – Sep 2021

* Proposed a novel circuit theory to re-explain the time-domain adjoint method
* Analyzed parametric yield based on the adjoint method, achieving >10× efficiency over MC approach.

**Baidu Inc.** Shanghai, China

*Quality Assurance (QA) Engineering Intern* Jun 2017 – Sep 2017

* Measured the robustness of programs and took charge of the FEEDS project

**Fudan University (State Key Laboratory of ASIC & System)** Shanghai, China

*Research Assistant, Supervisor: Prof. Jun Tao and Prof. Xin Li (Duke Univ.)* Sep 2016 – Jul 2021

* Improved post-silicon yield estimation with domain adaptation technique
* Estimated multi-corner failure rate and yield with Bayesian inference
* Performed multi-objective optimization of analog circuits based on a Bayesian neural network
* Optimized a time variant analog filter by hierarchical clustering (bachelor thesis)
* Developed an SRAM failure-rate estimation tool in collaboration with Prof. Xuan Zhang (WUSTL) [[see here](https://github.com/zhengqigao/CACHEFE)]

**Teaching Experience**

**Massachusetts Institute of Technology** Cambridge, USA

*Teaching Assistant* Feb 2025 – May 2025

* Performed TA duties for 6.3900 Introduction to Machine Learning (~400 students).
* Led the Transformer module and contributed extensively to the course lecture notes on Github, ranking as the second-largest contributor as of August 2025.

**Fudan University** Shanghai, China

*Teaching Assistant, Instructor: Prof. Jun Xu* Sep 2019 – Jan 2020

* Performed TA duties for Design of Analog Integrated Circuits

**Duke Kunshan University** Kunshan, China

*Teaching Assistant, Instructor: Prof. Dennis Quan (Duke Univ.)* Jan 2020 – Mar 2020

* Performed TA duties for Introduction to Programming & Data Structure at DKU

**Mentoring Experience**

* Ziang Chen, Fudan University B.E., now Ph.D. student at Fudan University Sep 2019 – Jun 2021
* Nanlin Guo, Fudan University B.E., now Ph.D. student at Fudan University Sep 2019 – Jun 2021
* Jiahe Shi, Fudan University B.E., now Ph.D. student at MIT EECS Sep 2019 – Jun 2021
* Su Zheng, CUHK Ph.D. student Sep 2023 – Present
* Michael Vogit, MIT B.S. student Mar 2024 – Aug 2024
* Mohit Dighamber, MIT B.S., now at Google Sep 2024 – Present
* Ferre Vanden Kerchove, Visiting Ph.D. student from IMEC Dec 2024 – Present
* Ziqin Li, University of Connecticut Ph.D. student Mar 2025 – Present
* Hancheng Ye, Duke Ph.D. student Apr 2025 – Present

**Selected Awards and Honors**

* 1st place, DAC Phd Forum 2025
* Editor’s highlight, Optica Express 2024
* ML and Systems Rising Star, MLCommons 2024
* Best Pitch Award, Microsystem Annual Research Conference 2024
* Oral (Spotlight) paper, International Conference on Learning Representations (top 5%) 2023
* Editor’s highlight, Optica Photonics Research 2023
* 2nd place, CVPR’23 Ego4d TTM challenge 2023
* DAC young fellowship 2023
* Outstanding Graduates of Shanghai (top 5%) 2021
* Biren Scholarship (3 awardees nationwide) 2020
* The Integrated Circuits Scholarship, Chinese Institute of Electronics (44 awardees nationwide) 2020
* National Scholarship, Fudan University (top 1%) 2020
* Rising Star of Academic, Fudan University (awarded to 11 graduate students majoring in Sci. & Engi.) 2020
* Pacemaker to Merit Student, Fudan University (awarded to 15 graduate students) 2019
* First Prize Scholarship, Fudan University (top 5%) 2019
* National Gold Award, China “Internet+” College Student Innovation & Entrepreneur Competition(top 5%) 2018
* National 2nd Prize, China Post-Graduate Mathematical Contest in Modeling (top 15%) 2018
* Outstanding Undergraduates of Shanghai (top 5%) 2018
* Meritorious Winner, American Mathematical Contest in Modeling (top 13%) 2017
* Top 11%, 2017 IEEE Xtreme Global Programming Competition (out of 3,350 teams worldwide) 2017
* First Prize Scholarship, Fudan University (top 5%) 2015, 2016, 2017
* National 2nd prize, China Mathematical Contest in Modeling (top 15%) 2016

**Representative Projects**

***PRML* Solution Manual (GitHub 980+ Stars)** Shanghai, China

*An Original Solution Manual for Pattern Recognition and Machine Learning (PRML)* Sep 2017 – Present

* Solved nearly all exercises in *PRML*; used as references by instructors and students globally. [[see here](https://github.com/zhengqigao/PRML-Solution-Manual)]

**Auto-Grading System** Kunshan, China

*An Auto-Grading System Developed at DKU* Jan 2020 – Mar 2020

* Led a small TA group to peruse the source code of Submitty
* Developed a fully automatic grading system based on Submitty

**“Dr. Stanley’s House” (Puzzle Video Game) Written in Haskell** Shanghai, China

*Final Project for Introduction to Functional Programming: From C/C++ to Haskell* Sep 2018 – Jan 2019

* Implemented the game with a complete plot via Haskell [[see here](https://github.com/zhengqigao/Dr-Stanley-house)]
* Organized the program structure, sorted the logic, and set the schedule as the team leader
* Exploited Haskell libraries (e.g., SDL2, SDL2-ttf, and SDL2-mixer) to add music and animation

**Additional Information**

**Professional Services**

* Reviewers: IEEE TCAD, ACM TODAES, ICCV, CVPR, Neurips, ICML, etc.,
* Organizers:
  + [Optsys Seminar](https://sites.google.com/view/optsys/home), with Jiaqi Gu
  + DAC’ 23 tutorial on optical computing, with Jiaqi Gu, Ulf Schilchtmann, Cunxi Yu
  + DAC’24 workshop on synergizing AI and circuit, with Zhou Jin, Mark Ren, Yiran Chen, Ron Rohrer

**Computer and Language Skills**

* Programming languages & Software: C/C++, MATLAB, Python, HSPICE, SPECTRE, Lumerical, Verilog, etc.,
* Languages: Mandarin Chinese (native), English (proficient)

**References**

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| --- | --- | --- |
| Ron Roher  Professor Emeritus of ECE, CMU  [rr1j@andrew.cmu.edu](mailto:rr1j@andrew.cmu.edu) | Luca Daniel  Professor of EECS, MIT  [dluca@mit.edu](mailto:dluca@mit.edu) | Dirk Englund  Professor of EECS, MIT  [englund@mit.edu](mailto:englund@mit.edu) |
| Wim Bogaerts  Professor, Ghent University – IMEC  [Wim.Bogaerts@ugent.be](mailto:Wim.Bogaerts@ugent.be) | Duane S. Boning  Clarence J. LeBel Professor in EECS, MIT  [boning@mtl.mit.edu](mailto:boning@mtl.mit.edu) |  |