

Schedule : Fall 2021

This is the tentative schedule of Mélange group for the Fall 2021 semester.

Meeting time & Place : Tuesdays 9:30 AM - 10:30 AM (MST/MDT) in ISTEc Room (CSB 305), and via Webex.

| WEEK | DATE | TOPIC | PRESENTER |
|------|------------|--------------------------------------------------------------------------------------------------------------|-------------------|
| 1 | 8/24/2021 | First meeting | |
| 2 | 8/31/2021 | Tracking schema statistics in Leela with GPU-efficient mathematics | Steve Kommrusch |
| 3 | 9/07/2021 | Increasing FPGA Accelerators Memory Bandwidth with a Burst-Friendly Memory Layout | Corentin Ferry |
| 4 | 9/14/2021 | There's plenty of room at the Top: What will drive computer performance after Moore's law? | Sanjay Rajopadhye |
| 5 | 9/21/2021 | From micro-OPs to abstract resources: constructing a simpler CPU performance model through microbenchmarking | Nicolas Derumigny |
| 6 | 9/28/2021 | Improved Parallel Cache-Oblivious Algorithms for Dynamic Programming and Linear Algebra | Malek Mechergui |
| 7 | 10/05/2021 | Compilation of Sparse Array Programming Models | Nana Yin |
| 8 | 10/12/2021 | Efficient Execution of Dynamic Programming Algorithms on Apache Spark | Chiranjeb Mondal |
| 9 | 10/19/2021 | Thesis work: Extending Simplifying Reductions | Louis Narmour |
| 10 | 10/26/2021 | Revealing Parallel Scans and Reductions in Recurrences through Function Reconstruction | Vidit Save |
| 11 | 11/02/2021 | Reverse Engineering for Reduction Parallelization via Semiring Polynomials | Shenmou Liu |
| 12 | 11/09/2021 | TBD | Alexandre Dubois |
| 13 | 11/16/2021 | TBD | Steve Kommrusch |
| 14 | 11/30/2021 | TBD | Nicolas Derumigny |
| 15 | 12/07/2021 | | |

Previous Semesters, including legacy reading lists

1. [Spring 2021](#)
2. [Fall 2020](#)
3. [Fall 2019](#)
4. [Spring 2019](#)

Standard paper study questions

1. Write a short (max 5 sentences) summary of the paper.
2. What is the problem addressed in the paper?
3. Why is the problem important?
4. How do the authors address the problem?
5. How do they evaluate their approach?
6. What is the punch-line (key cool idea, or "what I got out of this paper")? This is often different for different people and different from what the authors may have intended.

7. Make a list of deeper questions that you would like discussed in the meeting.

Current Reading Pool

- Akimasa Morihata, Shigeyuki Sato. **Reverse Engineering for Reduction Parallelization via Semiring Polynomials**. In *Proceedings of the 42nd ACM SIGPLAN International Conference on Programming Language Design and Implementation*, 2021, 2021. <https://doi.org/10.1145/3453483.3454079>
- Rawn Henry, Fredrik Kjolstad. **Compilation of Sparse Array Programming Models**. In *Proc. ACM Program. Lang.* 5, , 2021. http://fredrikbk.com/publications/Sparse_Array_Programming.pdf
- Charles E. Leiserson, Neil C. Thompson, Joel S. Emer, Bradley C. Kuszmaul, Butler W. Lampson, Daniel Sanchez, Tao B. Schardl. **There's plenty of room at the Top: What will drive computer performance after Moore's law?**. In *Science*, 6495, 2020. <https://www.microsoft.com/en-us/research/uploads/prod/2020/11/Leiserson-et-al-Theres-plenty-of-room-at-the-top.pdf>
- Mohammad Mahdi Javanmard, Zafar Ahmad, Jaroslaw Zola, Louis-Noël Pouchet, Rezaul Chowdhury, Robert Harrison. **Efficient Execution of Dynamic Programming Algorithms on Apache Spark**. In *[2020] IEEE International Conference on Cluster Computing (CLUSTER)*, , 2020. <https://par.nsf.gov/servlets/purl/10224953>
- Guy E. Billeloch, Yan Gu. **Improved Parallel Cache-Oblivious Algorithms for Dynamic Programming and Linear Algebra**. In *arXiv*, 1809.09330, 2019. <https://arxiv.org/abs/1809.09330>
- Peng Jiang, Linchuan Chen, Gagan Agrawal. **Revealing Parallel Scans and Reductions in Recurrences through Function Reconstruction**. In *Proceedings of the 27th International Conference on Parallel Architectures and Compilation Techniques*, 2018, 2018. <https://doi.org/10.1145/3243176.3243204>
- Peng Li, Peng Zhang, Louis-Noel Pouchet, Jason Cong. **Resource-Aware Throughput Optimization for High-Level Synthesis**. In *Proceedings of the 2015 ACM/SIGDA International Symposium on Field-Programmable Gate Arrays*, , 2015. <https://doi.org/10.1145/2684746.2689065>
- C. Murras, P. Quinton, S. Rajopadhye, Y. Saouter. **Scheduling affine parameterized recurrences by means of Variable Dependent Timing Functions**. In *[1990] Proceedings of the International Conference on Application Specific Array Processors*, , 1990. <https://ieeexplore.ieee.org/document/145447?arnumber=145447>
- Sanjay V. Rajopadhye, S. Purushothaman, Richard M. Fujimoto. **On synthesizing systolic arrays from Recurrence Equations with Linear Dependencies**. In *Foundations of Software Technology and Theoretical Computer Science*, , 1986. https://link.springer.com/chapter/10.1007/3-540-17179-7_30

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