TU/e Technische Universiteit Eindhoven University of Technology

Thijs Laarhoven

PhD student

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Department Dialogue, Eindhoven, The Netherlands
(September 17, 2015)

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Who am I?

- PhD student
- Section: Discrete Mathematics (DM)
- Group: Coding Theory and Cryptology (C&C)
- Promotor: Tanja Lange
- Supervisor: Benne de Weger
- Office: 6.103

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What do I do?

- Bachelor's project: The Collatz conjecture
- Master's project: Collusion-resistant fingerprinting
- Doctoral project: Lattice algorithms

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The Collatz conjecture

Suppose we iterate the following function:

- If n is even, then $f(n) = n/2$.
- If n is odd, then $f(n) = 3n + 1$.

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2015: Still no solution!

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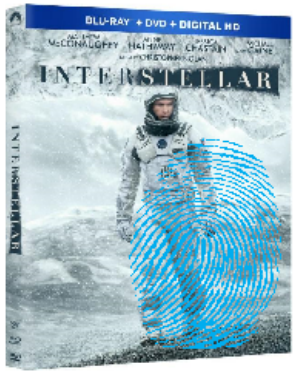

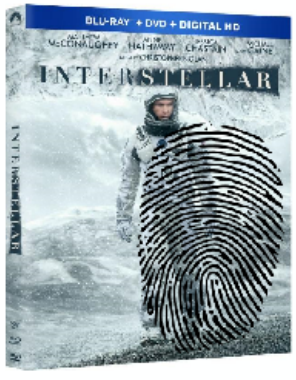

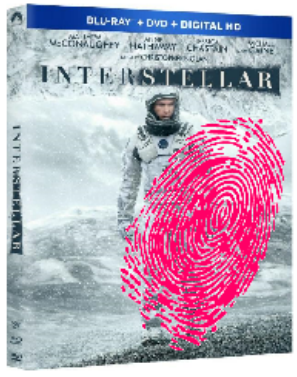

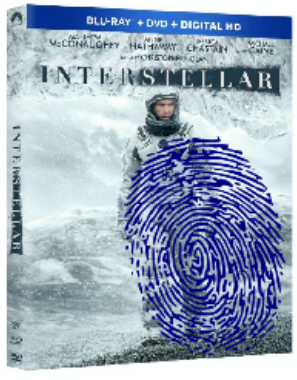

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Collusion-resistant fingerprinting

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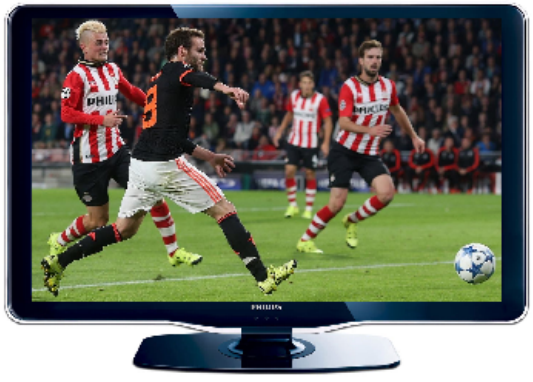

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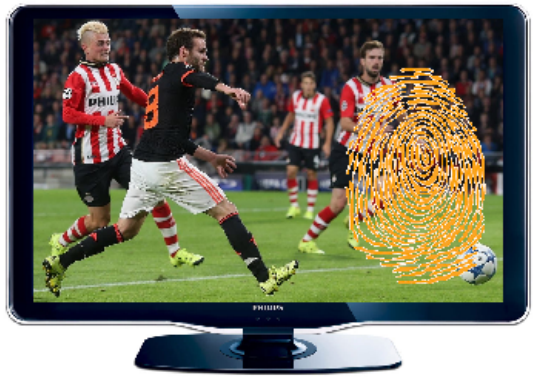




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Lattices

What is a lattice?

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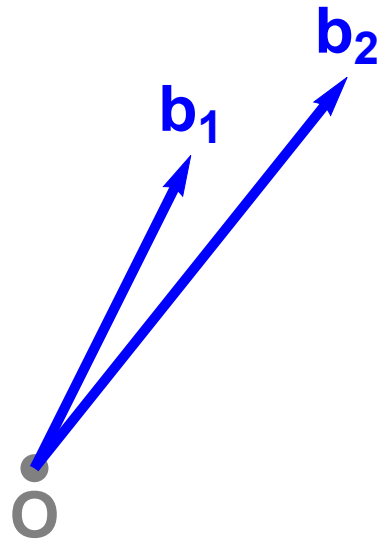

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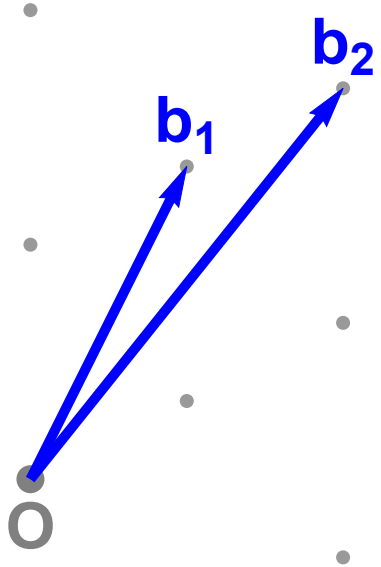

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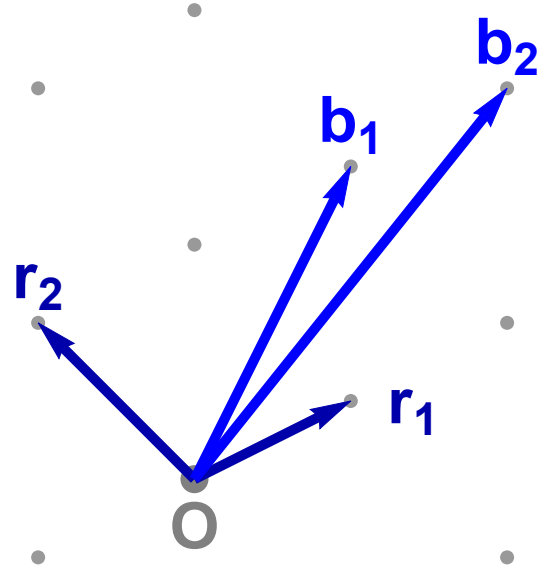
Lattices

Lattice basis reduction



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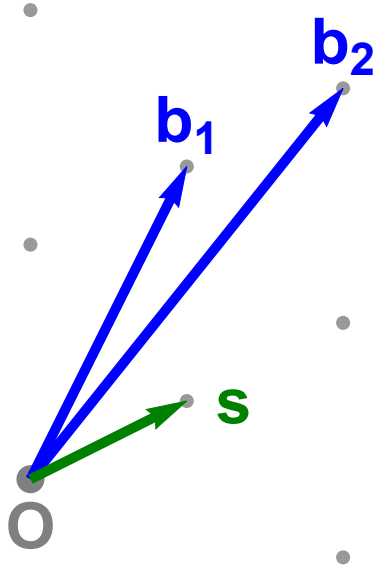
Lattices

Shortest Vector Problem (SVP)



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Questions?