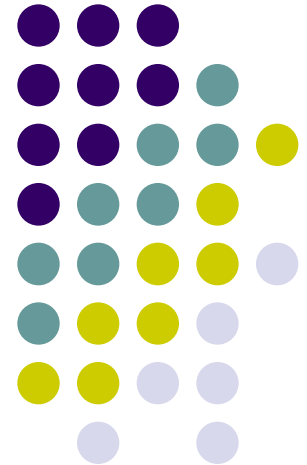
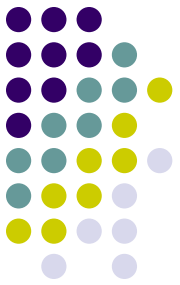


# Probabilistic and Frequency Finite-State Transducers

Kaspars Balodis  
Anda Berina  
Gleb Borovitsky  
Rusins Freivalds  
Ginta Garkaje  
Vladimirs Kacs  
Janis Kalejs  
Ilja Kucevalovs  
Janis Rocans  
Madars Virza

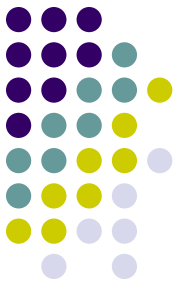




# Probabilistic transducers

- We explore so-called Las Vegas transducers, which give a false answer with probability 0,
- and prove theorems, such as if any Las Vegas transducer can compute a relation with probability greater than  $\frac{1}{2}$ , then this relation can be computed with a deterministic transducer.

# Deterministic transducers with help symbols



- We observe deterministic transducers where one or more added help symbols are viewable at any time during the computation of a relation,
- and compare these with Las Vegas transducers, proving that, for example, if you need  $n$  help symbols to compute a relation, a Las Vegas transducer can compute this relation with probability  $1/n$ ,



# Frequency transducers

- A frequency transducer is a transducer, which has  $n$  input tapes with unique inputs and  $n$  output tapes, that  $(m,n)$ -calculates a relation on all the tapes in a way, that at least  $m$  out of the  $n$  output tapes produce a correct result.



**Thank you for your attention**