#### Data Science Past Paper

• Foundations of Data Science (2020–2018)

# **Probability Models**

- Mock Exam1
- y2022p6q7 (a.i.ii)
- y2022p6q8 (c,d)
- y2021p6q7
  - estimate parameters
- y2021p6q8
- y2019p6q8
  - linear model
- y2018p6q8

## Inference

- Mock Exam3
- y2020p6q8
  - Inference for significance
    - parametric resampling
    - multiple unknown parameters' MLE
      - use the entire dataset (Multinomial)
    - one-sided vs two-sided test, p-value
  - linear vs count-based model
- y2022p6q7 (a.iii-c)
  - (non)parametric resampling, confidence interval
  - computational Bayesian methods

### Bayesian

- Mock Exam2
- y2019p6q7

# **Stochastic processes**

### МС

- Mock Exam4
- y2020p6q7
  - Matrix  $P, \pi$ . Detailed balance equations.
  - posterior  $\omega$ , pseudocode
  - $\circ~$  posterior confidence interval  $prior_{saar{m}ple}(F_\omega < 0.025, F_\omega > 0.975)$
- y2022p6q8 (a,b)

• stationary distribution, memoryless-ness