

# AI at the Webscale Project Results

Bas Bootsma & Fenno Vermeij

Radboud University Nijmegen

28th June 2015



- Epsilon-greedy
- Gibbs-sampling
- Thompson-sampling

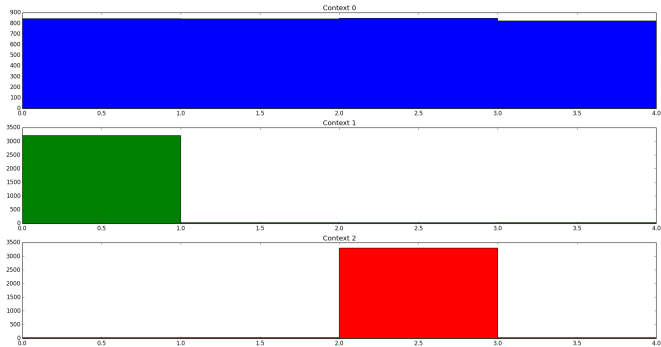


$$r = \beta_0 + \beta_{x_1} c_1 + \dots + \beta_{x_k} c_k + \\ \beta_{y_1} a_1 + \dots + \beta_{y_l} a_l + \\ \beta_{z_1} c_1 a_1 + \dots + \beta_{z_m} c_k a_l$$

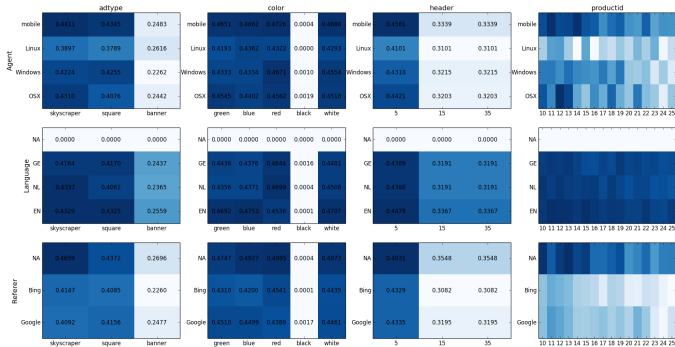
- Reward for update: use price · effect instead of effect



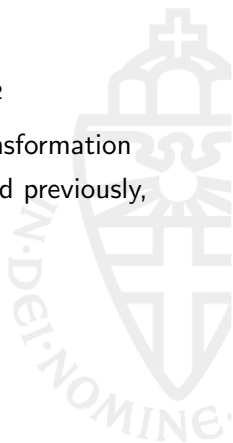
# Visualization



# Visualization



- Price: Maximize polynomial:  $\beta_0 + \beta_1 \cdot p + \beta_2 \cdot p^2$
- Multivariate Gaussian speedup: use Cholesky transformation
- Userid: add extra features: average price user paid previously, if user has bought anything previously



- Average reward:
- Standard deviation:
- Time taken:
- Any questions?

