A Medical Recommendation System Design via Combinatorial Gaussian Process Upper-confidence Bound Algorithms

Machine Learning for Healthcare and Diabetes Workshop

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January 19, 2022

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Combinatorial Multi Armed Bandits (CMAB)

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- different **feedback (reward)** mechanisms
- a rather complicated problem compared to the classical MAB

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- vital measurements in ICU
- blood pressure measurements
- vaccination cards
- various past test results ordered by the doctors
- ...

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- too much data for a doctor to go over quickly

Figure 1: [Rawal, 2020]

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Electronics Health Records (EHR)

- too much data for a doctor to go over quickly
- not all parts of the data are equally important
- there may be information that is **actionable on**
- **combinatorial multi armed bandits**: can we learn recommending critical information in EHR to doctors?

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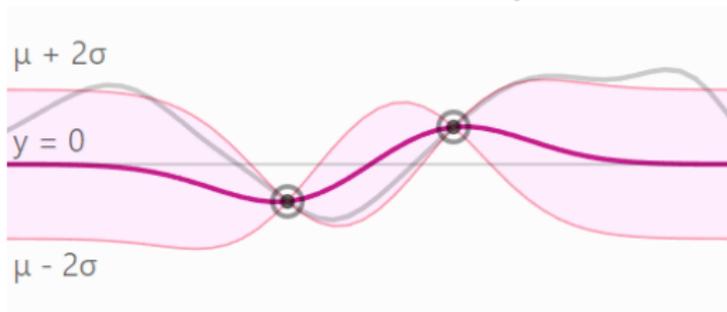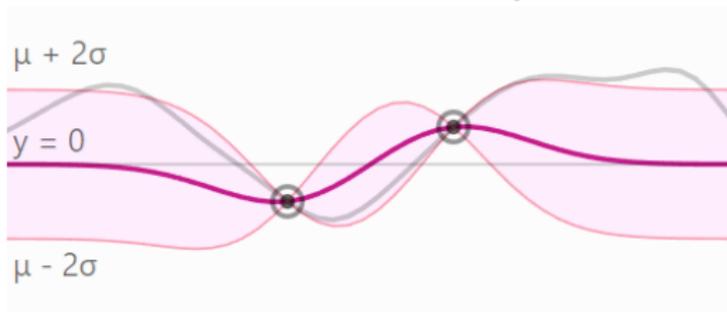
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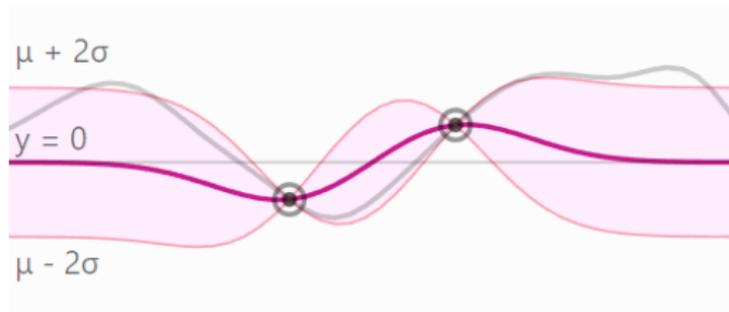

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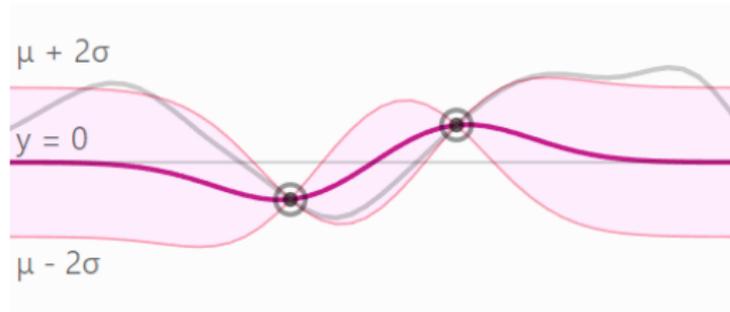**CYBORG**

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- maybe, but…
- how can we **digitalize** the (fairly often) **semantic context** in a smart way?
- a not at all trivial challenge

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- **goal:** to learn recommending relevant and actionable data from EHR in a context-aware manner
- **bonus (interpretability):** can the recommendation engine provide some sort of explanation regarding its recommendations?

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Candidate System Model
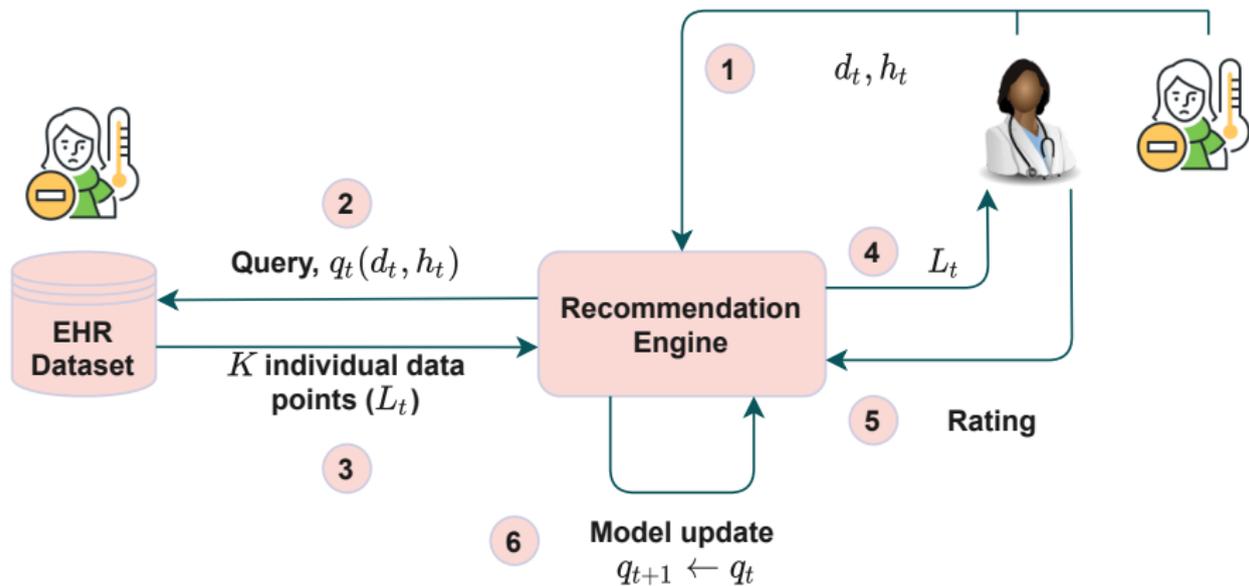
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📄 Rawal, Y. (2020).
Electronic health records (ehr) on blockchain can be transformational.
https://medium.com/akeo-tech/electronic-health-records-ehr-on-blockchain-can-be-transformational-ecc4974659f1.

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