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CPS: Small: Incentivizing Desirable User Behavior in a Class of CPS (#1739295)

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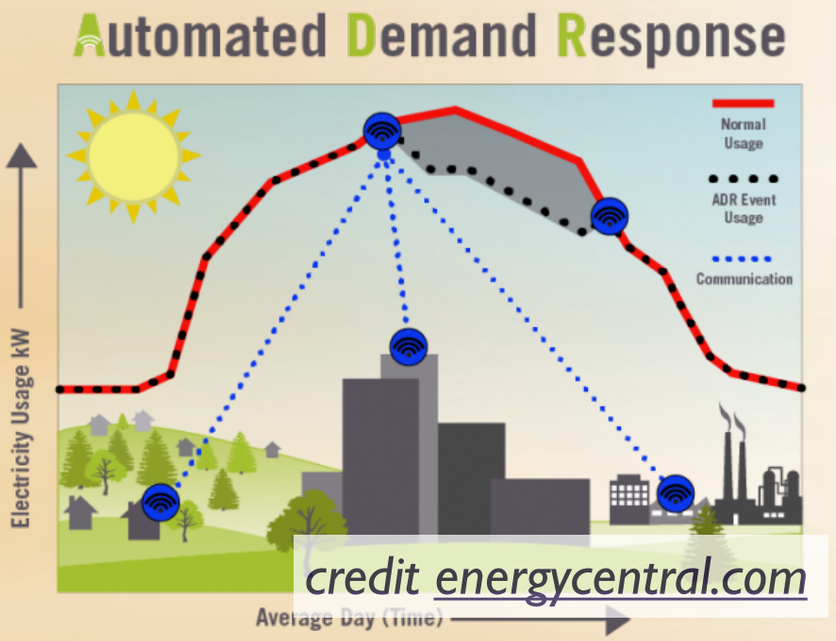
CPS PI Meeting 2021

Abstract Structure



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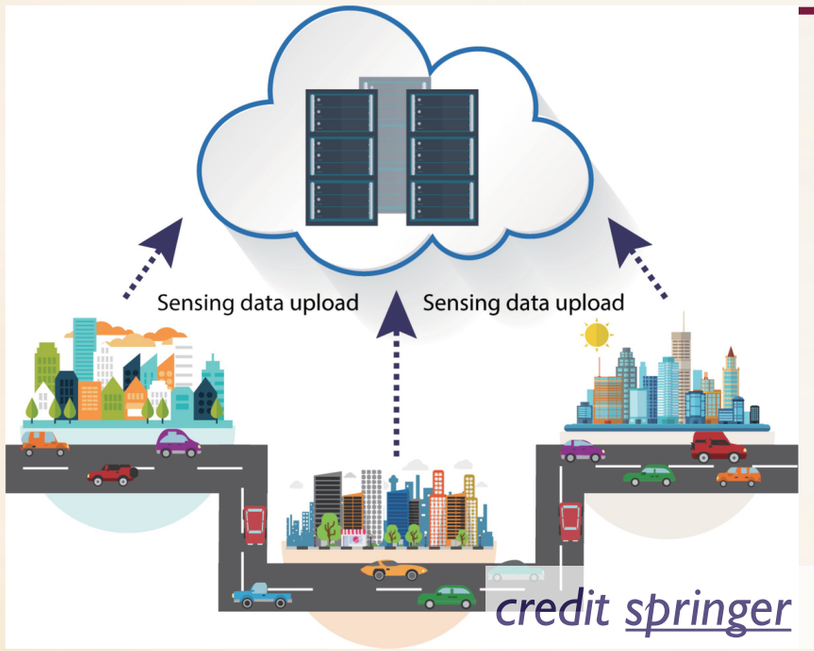

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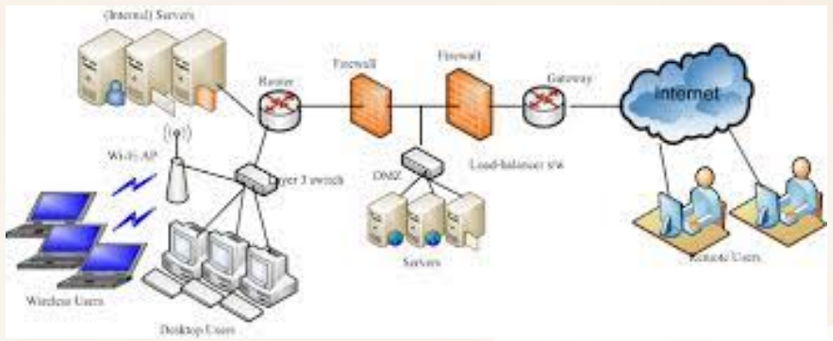

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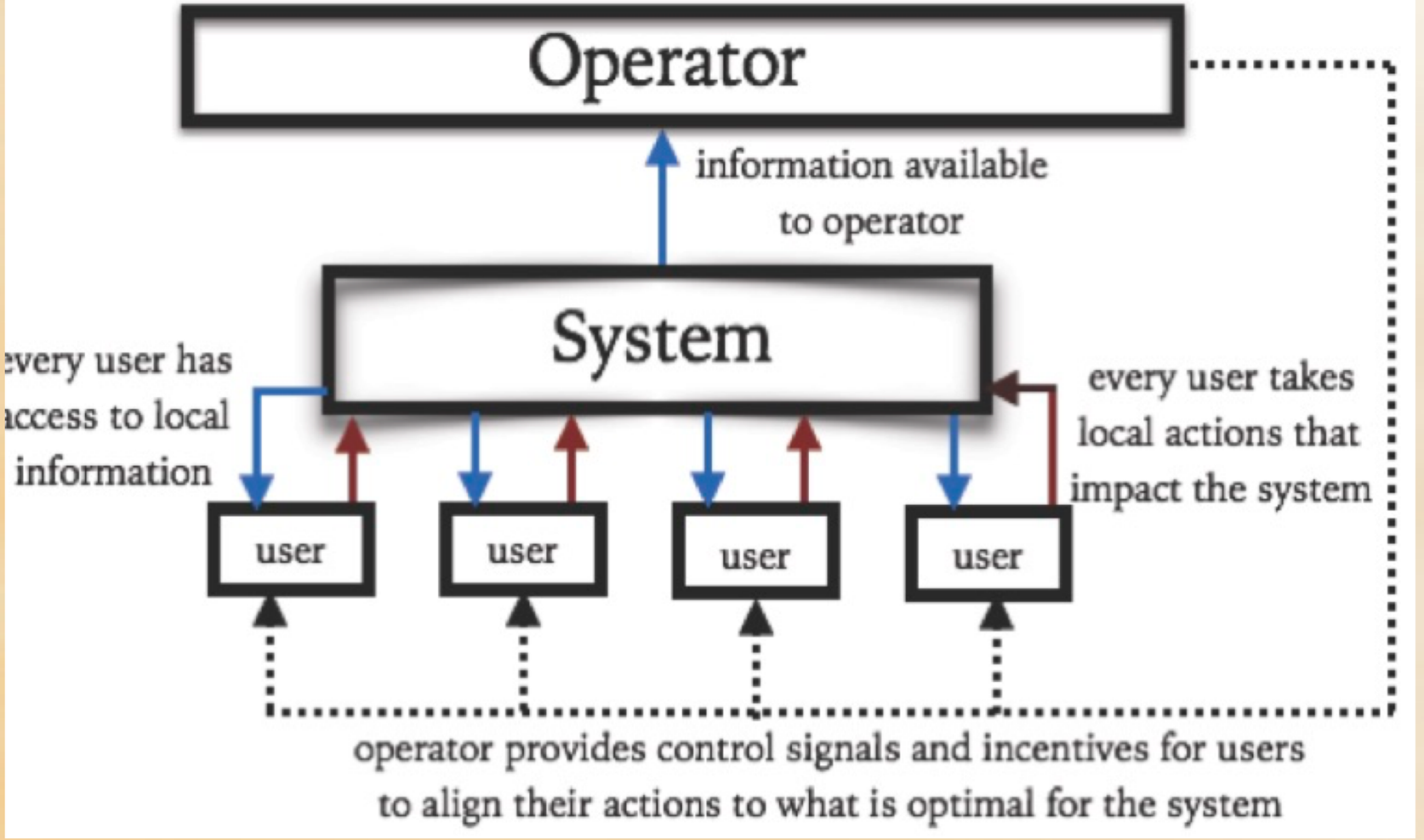
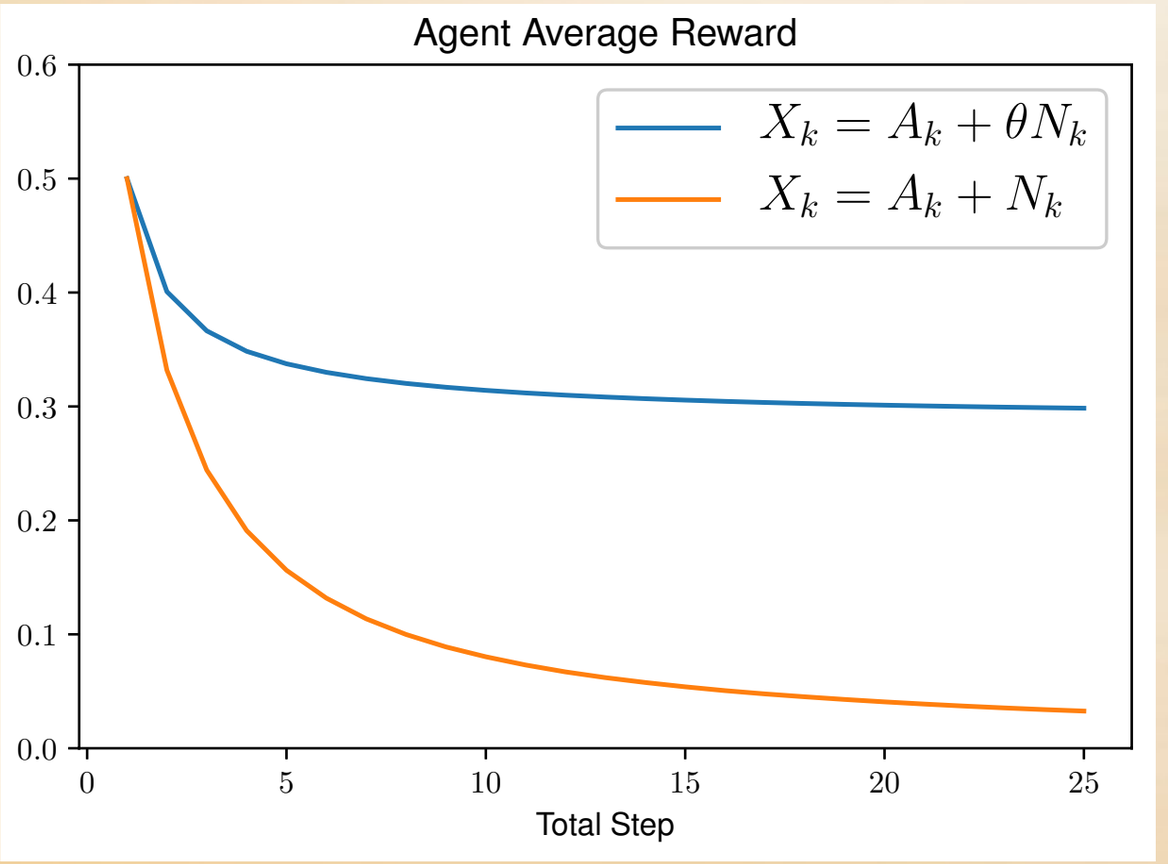
Design incentives to introduce desirable behavior in active participants in CPS



Information Assymetry

- Presence of information asymmetry leads to possibility of rent seeking by the users
- However, optimal utilization of the private information to obtain rent can leak information
- Can the principal design data-driven contracts to minimize rent seeking?
- We showed that for two settings — (i) adverse selection followed by moral hazard, and (ii) when agents seek rent by colluding — this is possible
- Form of result: For finitely many interactions, agents can always gain rent, but for infinitely many interactions, no rent seeking is possible



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More details in: (i) Venkitasubramaniam, Parv, and Vijay Gupta. "Data-driven contract design." 2019 American Control Conference (ACC). IEEE, 2019. (ii) Nayara Aguiar, Venkitasubramaniam, Parv, and Vijay Gupta. “Data-Driven Contract Design for Multi-Agent Systems with Collusion Detection.” 2021 IEEE Signal Processing Letters, Submitted. Copy available on ArXiv or vgupta2@nd.edu