## **Research: Optimization, Control, and Power**

- Optimization: Design global optimization techniques based on matrix completion, convex relaxation, rank-constrained optimization, tree decomposition, etc.
- Cost local global Production

- Distrusted Control: Design optimal distributed controllers/decision makers, with applications in communications, power, aerospace, traffic, multi-agent systems, etc.
- $S_1 \xrightarrow{S_2} \xrightarrow{S_3} \\ u_1 \xrightarrow{Y_1} \underbrace{u_2} \xrightarrow{Y_2} \underbrace{u_3} \xrightarrow{Y_3} \\ C_1 \xrightarrow{C_2} \xrightarrow{C_3} \\ C_3 \xrightarrow{C_3} \\$

 Power Systems: Design an optimal brain (algorithms/tools/protocols) to improve operation and make the grid sustainable. This may help to save billions of dollars annually.

