Project Title: Fairness and Energy Efficiency in Resource Management for Federated Software Defined Networks

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Project summary: Due to the ever expanding nature of Internet, the fact that devices are in charge of both data transmission and making the routing decisions in a distributed manner causes inefficiency and scalability problems as well as making the network administration difficult. To address this problem, “Software Defined Networking (SDN)” paradigm, which separates data and control plane logic and makes the control decisions such as routing in a centralized manner by a separate device, has been proposed. An architecture that has multiple SDN controllers is called a federated SDN architecture.

In this project, we aim to provide an algorithmic perspective on resource allocation and routing in a federated SDN architecture. The project entails integer programming formulations, heuristic algorithms and a formal combinatorial analysis as well as simulation-based performance comparison and numerical evaluation.