Multiple-I/O Switched-Inductor Battery-Charging Regulators

Gabriel Rincon-Mora
Professor
Georgia Tech

ABSTRACT
Charging and powering consumer electronics and wireless microsensors are the focus of ardent research today. Volume, maximum power point, power-conversion efficiency, accuracy, and response time are critical in these applications because space, energy, and power are scarce commodities and emerging electronic loads are widely variable, dynamic, and sensitive to their supplies. Meeting operating requirements becomes increasingly more challenging when the input source is absent, as in the case of portable electronics that disconnect from their sources and ambient sources that cease to generate power. The research presented in this seminar investigates how one switched inductor can draw, transfer, and supply power to the load and battery and draw assistance from the battery when the input is absent or deficient. Controlling the switched inductors developed with this research so the output is well-regulated, the battery charges, and the system is at the maximum power point is also addressed with this work.