THE UNIVERSITY OF
CHICAGO

Departments of Computer Science, Mathematics, Statistics, and the Computation Institute
SCIENTIFIC AND STATISTICAL COMPUTING SEMINAR

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On William Karush and the KKT Theorem:
A Chicago Story

THURSDAY, October 3, 2013, at 4:30 PM
Eckhart 133, 5734 S. University Avenue

ABSTRACT

This talk is about William Karush and his role in the Karush-Kuhn-Tucker theorem (KKT theorem) of nonlinear programming. It will retell the story of fundamental optimization results that he obtained in his master's thesis: results that he neither published nor advertised and that were later independently rediscovered and published by Harold Kuhn and Albert Tucker. The principal result—which concerns necessary conditions of optimality in the problem of minimizing a function of several variables constrained by inequalities—first became known as the Kuhn-Tucker theorem. Years later, when awareness of Karush's pioneering work spread, his name was adjoined to the name of the theorem where it remains to this day. Still, the recognition of Karush's discovery of this key result left two questions unanswered: why was the thesis not published? and why did he remain silent on the priority issue? After learning of the thesis work, Kuhn wrote to Karush stating his intention to set the record straight on the matter of priority, and he did so soon thereafter. In his letter to Karush, Kuhn posed these two questions, and Karush answered them in his reply. These two letters will be quoted here. In addition to this vignette, the talk will offer a biographical sketch of Will Karush, a native of Chicago and holder of three degrees in mathematics from the University of Chicago; it will close with a further mystery in the time line of the discovery of Karush's work.

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