Detection and Quantification of Growth Spurts
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Where are developmental spurts?
Spurt = local increase in growth rate or max in velocity (1st derivative)

Method: Automatic Maxima Detection (AMD)
based on functional data analysis (FDA) (Ramsay, Bock et al. 1995)

Challenge
Noise may cause spurious spurts

Goal
Identify and quantify reliable spurts
- Where? $\rightarrow$ location of spurt
- How big? $\rightarrow$ amplitude or size
- How long? $\rightarrow$ duration

Results: Berkeley Growth Study
(Tuddenham & Snyder, 1954)

Significant spurt? Use confidence bands
Significant spurt if the straight line connecting minima (green line) goes outside the confidence bands

Conclusion: Automatic detection and quantification of growth spurts
Presented at biennial meeting of the Society for Research in Child Development
Boston, MA, USA, March 29 - April 1, 2007

Research supported by a Lloyd Carr-Harris McGill Major Fellowship to F.D. and a grant to T.R.S. from the Natural Sciences and Engineering Research Council of Canada. Many thanks to Kris Onishi for her help.