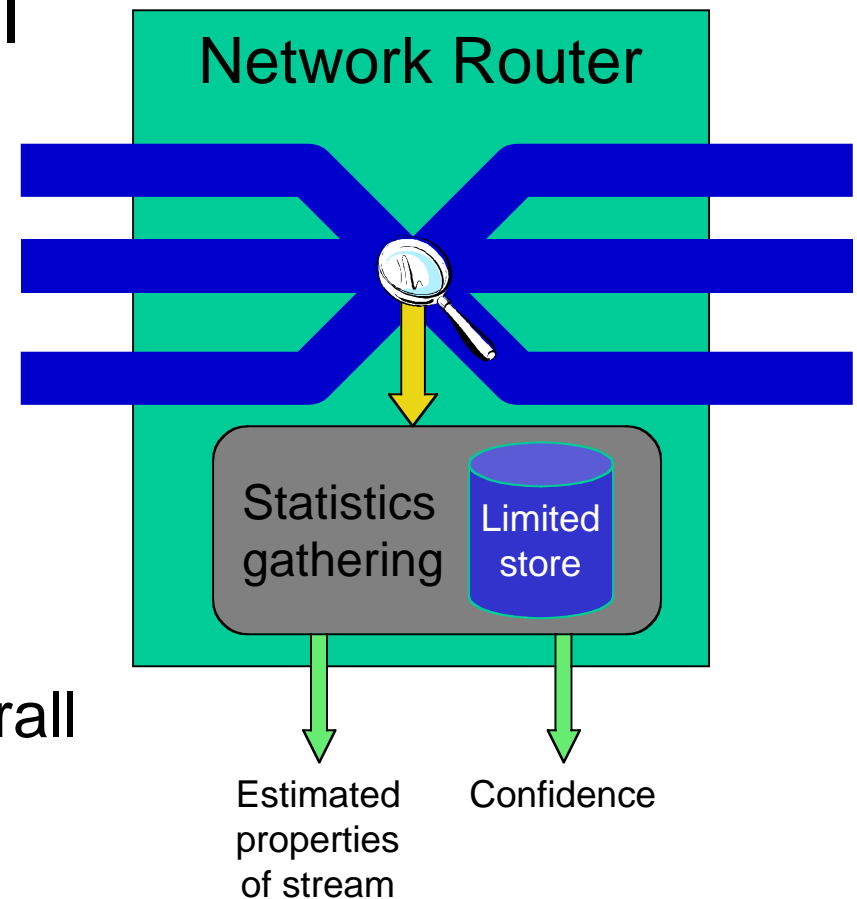




Project Overview

- **Goal:** Extract essential characteristics of network traffic as it streams by router
 - Design and analyze efficient algorithms and data structures
 - Must be fast per packet and use little space overall
 - Prove lower bounds





Progress Through December 2001

- Major progress in two months of project
- Collaboration with Prof. I. Munro and Prof. A. López-Ortiz (University of Waterloo)
- **Central problem:** Find k most popular destination addresses for packets
 - Designed practical models of computation
 - Designed natural models of network traffic distribution, from worst case to average case
 - Designed and analyzed several efficient algorithms with guaranteed quality and which report confidence
 - Proved optimality up to small constant factors



Research Plan for the Next Six Months

- Several open problems remain, for example:
 - Can randomization help in the worst case (oblivious-adversary model)?
 - We have shown that randomization helps significantly in the average case
 - **Idea:** Take this algorithm and randomly perturb the sample windows to thwart adversary
- **Future:** Implement the algorithms to evaluate their performance, and reasonableness of models, on real data