Network Radar: Update

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Overview

- Repeating Content
  - Objectives
  - Practices
  - Technical approach
  - Status
- Network Radar Database
  - Objectives
  - Practices
  - Technical approach
  - Status
- Risks
- Technology Transition

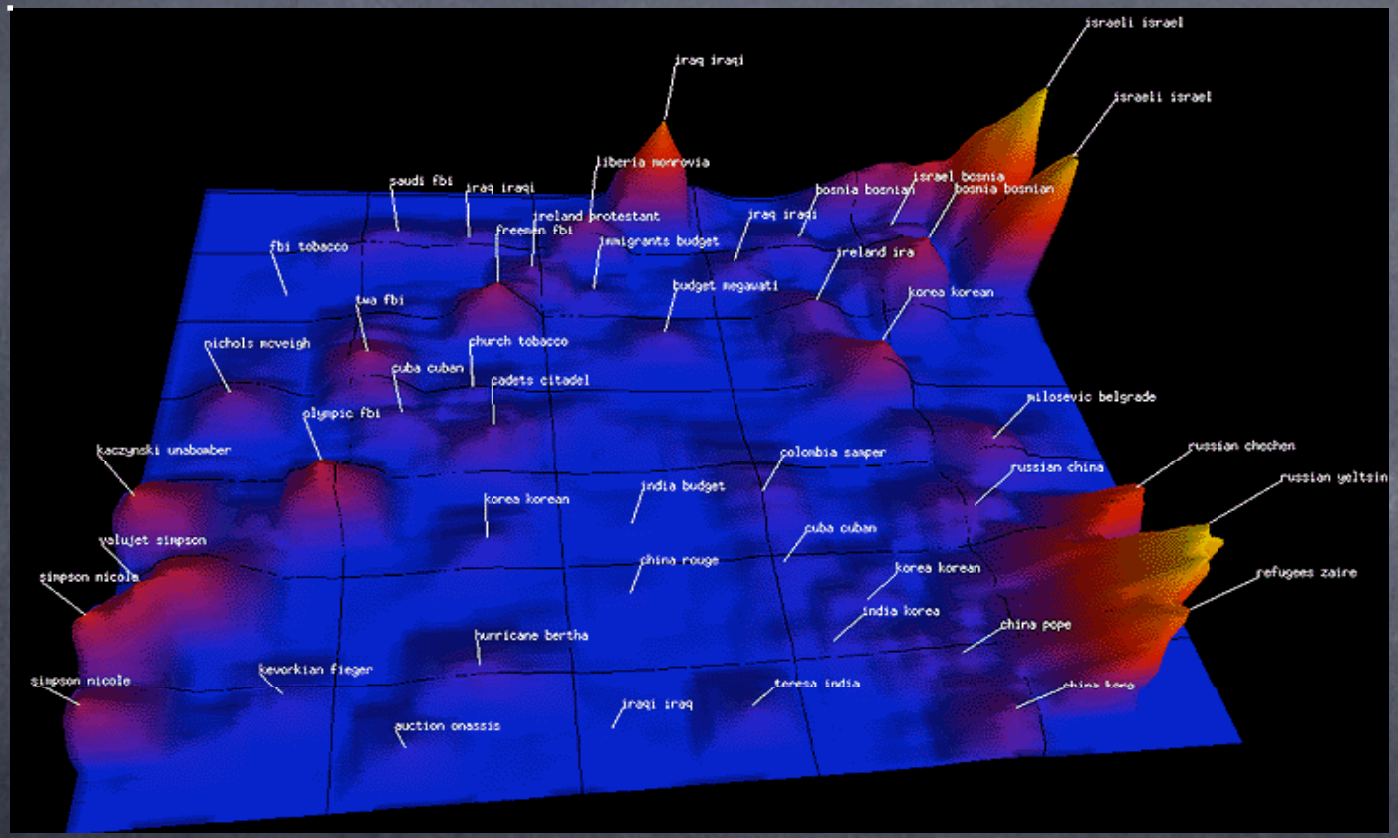
Repeating Content: Objective

- Identify repeating content.
  - Attackers "script" an attack and try it multiple times. The same content going to several web servers might indicate a new attack.
  - Worm carry essentially the same code from infection to infection.
  - Automatic signature (forwards and backwards in time).
- Detection needs to be robust against minor perturbations in content.

Existing Practice

- Largely not addressed in this problem space.
- Thumbprinting applied the technique for tracing hackers.
- Addressed in other information spaces, SPIRE, Themescape, Webscape.
- Large body of multivariate statistical analysis; principal component analysis.

PNNL's SPIRE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Cartia's Commercial Version

Technical Approach

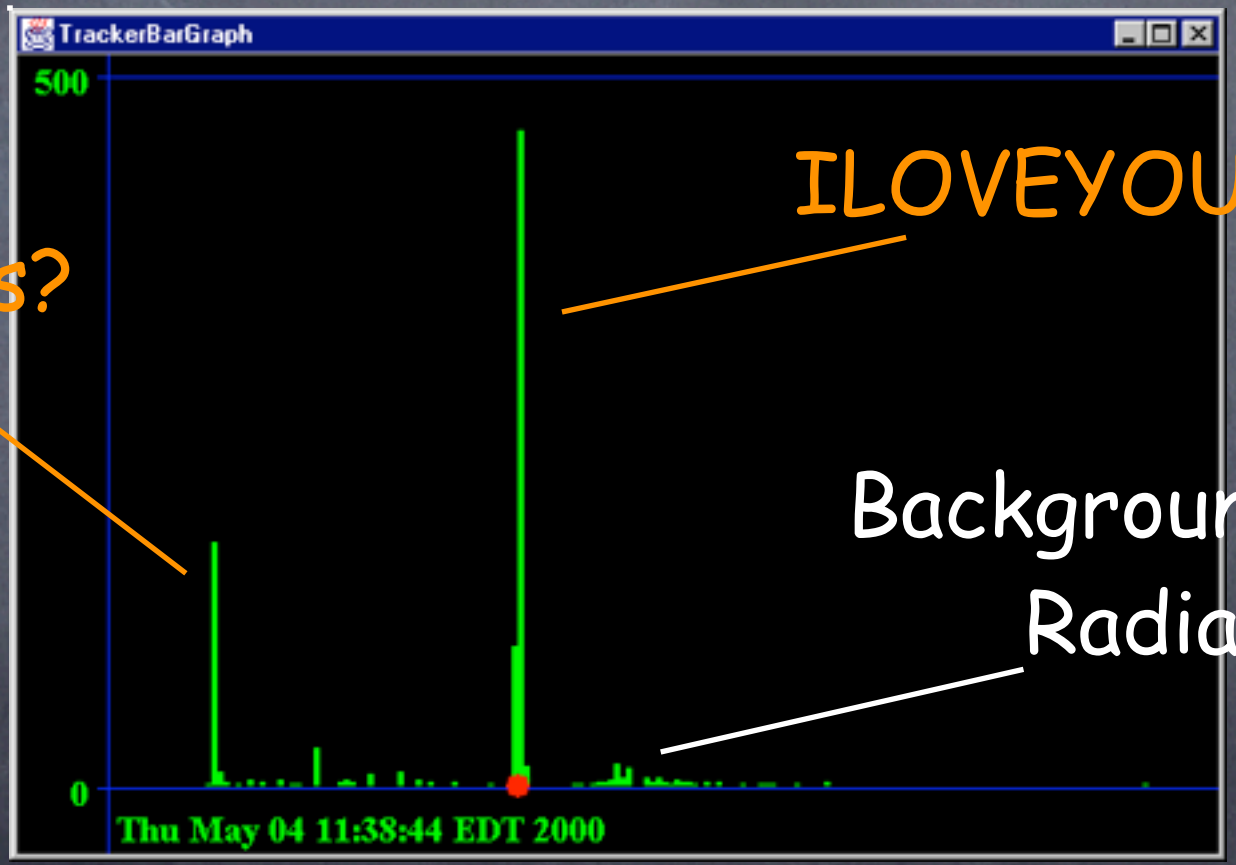
- Build mini-sensors for Network Radar.
- Reduce content to a single number or small set of numbers. Conceptually similar to checksums.
  - Rapidly compare numbers
  - Identify clusters of activity
- Apply principal component analysis (PCA) to optimize "robust checksum" generation keys.

Status

- Initial mini-sensors implemented in Network Radar.
  - Generic PcaStream.
  - WebPcaStream (optimized for web requests).
  - Generate numbers only; post mortem analysis tools needed to generate clusters or perform comparisons.
- Analyzed ILOVEYOU hitting Rome Labs.
- Needs more tuning.
- Need to address junk mail and mailing lists.

Rome: Morning E-Mails

Rome: ILOVEYOU Strikes



ILOVEYOU

What is this?

Different Mail encoding?

Background Worm Radiation