Build Smarter Cross-Platform Applications Using Xamarin, Azure Cognitive Services,& ML.NET

Richard Taylor

Vice President of Platform and Cloud Engineering

SentryOne

@rightincode – http://www.rightincode.com

Who is Richard Taylor?

Full Stack Software Engineer

Lives in Huntersville, NC

Organizer of CLT Xamarin Developers

Lead Organizer of Modern Devs CLT

http://www.rightincode.com

@rightincode

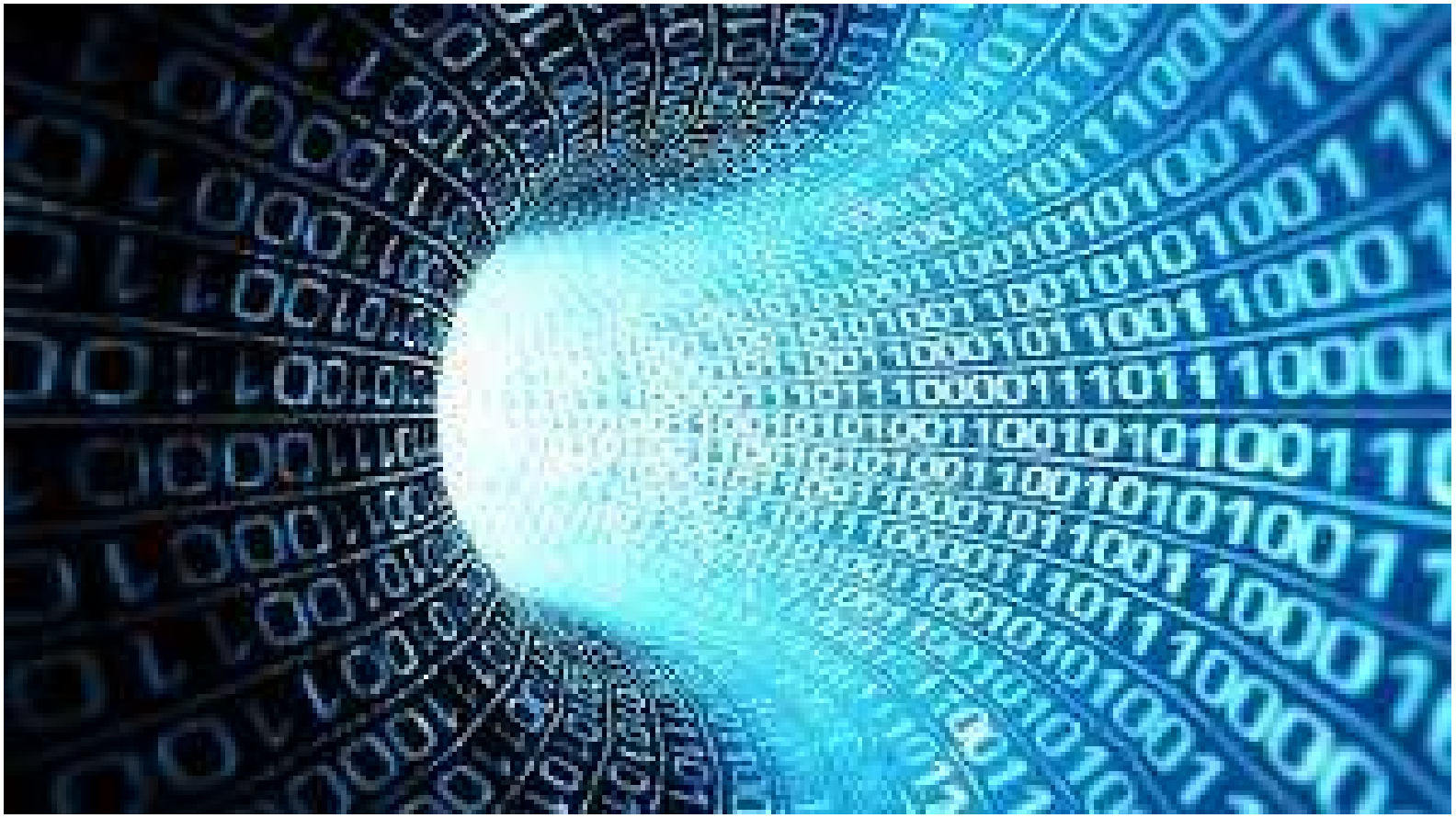
Vice President of Platform and Cloud Engineering

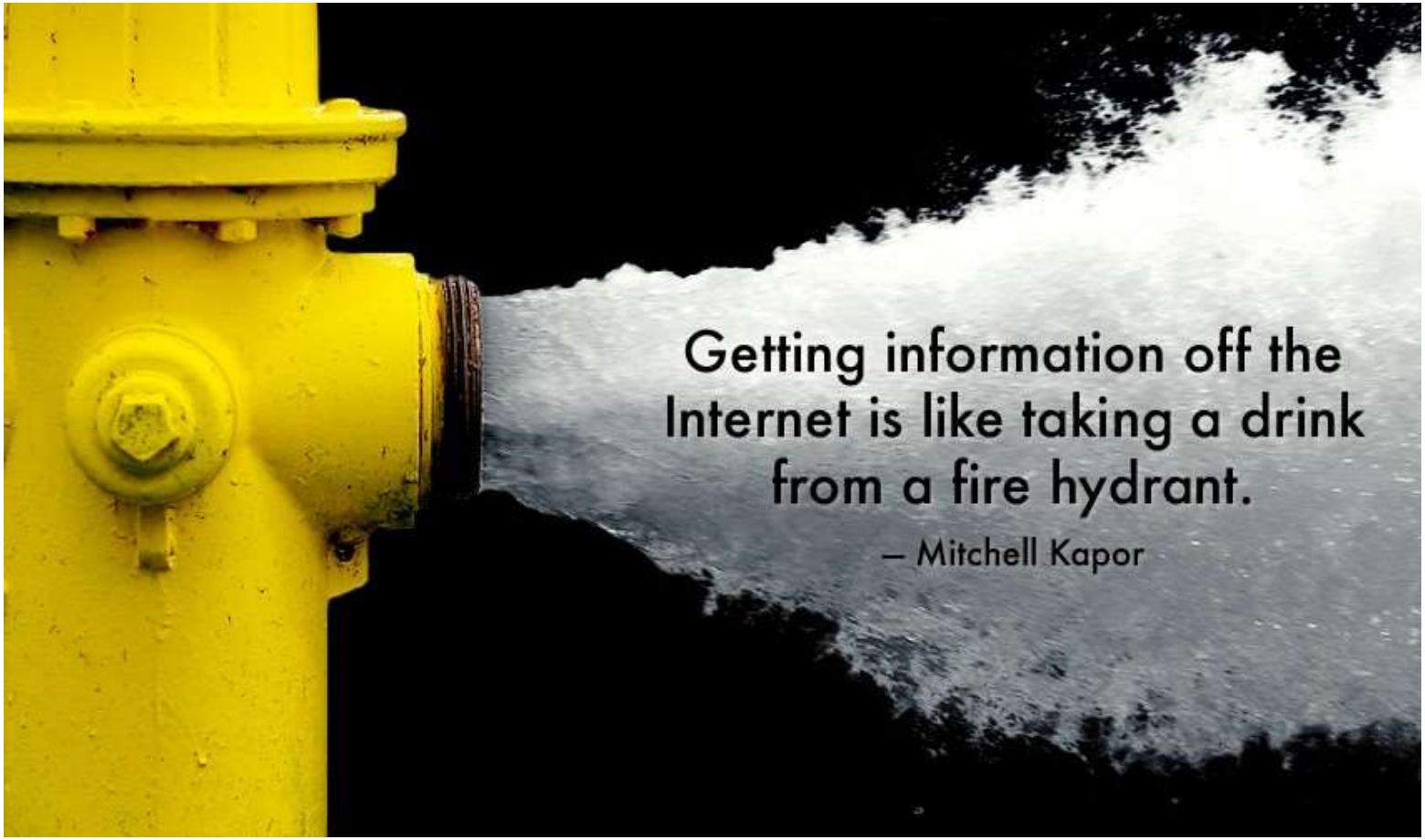
Charlotte, NC

http://www.sentryone.com

@sentryone

What’s the problem?




Getting information off the Internet is like taking a drink from a fire hydrant.
– Mitchell Kapor

WEB
TECH
COMMERCE
ANALYTICS

My Technology Solution

- Build a “smart” reader
  - Will initially focus on information disseminated via RSS feeds (blogs, online magazines, news)
  - Cross-platform (mobile, web, desktop – multiple OS’s)
  - Leverage available cloud technology when beneficial and effective
  - Use machine learning to create a personalized experience from the user’s view point

What tool(s) should I use?

Demo
Viewpoint Reader

The First Tool

The Second Tool

- Azure
  - Azure App Service
    - Web Apps
  - Azure Cognitive Services
    - Web search
    - Key phrase extraction

Azure App Service

- Platform-as-a-service offering of Microsoft Azure
- It can be used to:
  - Create web and mobile app backends for any platform or device
  - Integrate with SaaS solutions
  - Connect to on-premises applications
  - Automate business processes
- Apps created run on fully managed virtual machines in Azure

Azure App Service Key Features

- Autoscaling
- Staging Environments
- Continuous Deployment
- Virtual Networking
- Isolated and Dedicated Environments

Azure App Service - Why Use?

- Support multiple languages and frameworks (ASP.NET, Node, Java, PHP, and Python)
- Supports DevOps optimization (continuous integration and deployment)
- Scale globally with high availability
- Selection of connectors that can be used with popular SaaS platforms and on-premises platforms/data
- Security and compliance
- Selection of application templates in the Azure Marketplace
- Visual Studio integration

Azure App Service - App Types

- **Web Apps** - Used to host websites and web applications
- **Web App for Containers**
- ~~**Mobile Apps** - Used to host mobile app back ends~~
- ~~**Api Apps** - Used to host RESTful API's~~ (**Web Apps**)
- **Logic Apps** - Used to automate business processes and integrating systems and data without writing code

Azure Cognitive Services

- ACS is designed to help developers build intelligent applications without having direct AI or machine learning skills or knowledge.
- ACS is delivered via Restful API and SDK's
- Supports multiple conversational languages
- Covers these main areas – vision, speech, language, search, decision (anomaly detection, content moderation, *personalizer(preview)

The Second Tool

- Azure
  - Azure App Service
    - Web Apps
  - Azure Cognitive Services
    - Web search
    - Key phrase extraction

The Third Tool

ML.NET

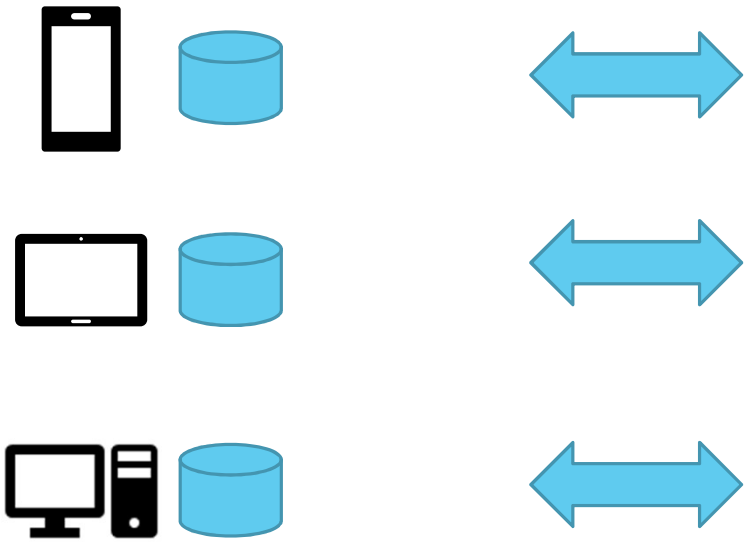
- Machine Learning Framework
- Cross-platform
  - Not supported on ARM processor architecture – on the roadmap
- Designed to allow developers to build custom learning models
  - Import available data
  - Transform data for training
  - Create, train, test, use model
- Extensible and will allow use of other libraries like Accord.NET, CNTK, and Tensorflow
- Currently framework status – 1.2.0

Viewpoint Reader

Design

Viewpoint Reader – System Architecture

Viewpoint Reader App
Local Subscription Storage

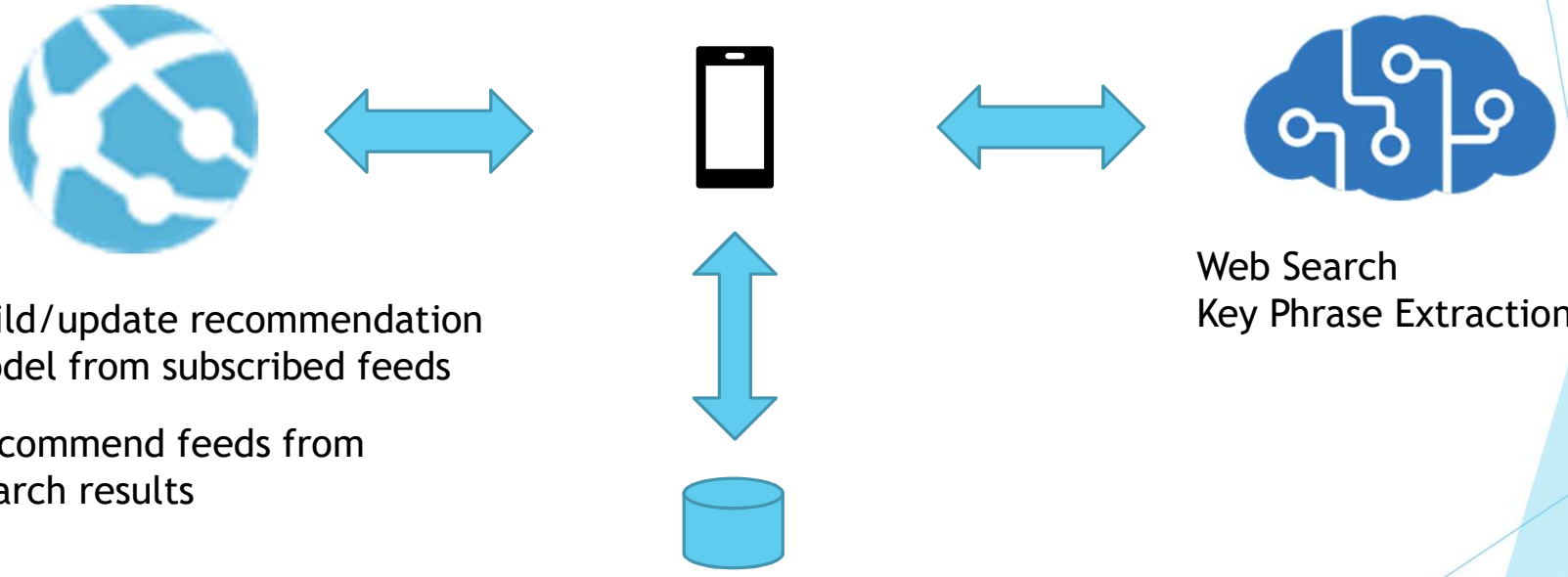


Secondary Subscription Storage,
Model Maintenance, Prediction

Web Search
Language – Key Phrase Extraction

Viewpoint Reader – Application Architecture

Secondary storage of subscribed feeds



Build/update recommendation model from subscribed feeds

Recommend feeds from search results

Local storage of subscribed feeds

Web Search
Key Phrase Extraction

Current State ViewPoint Reader

To the Code!
If we have time…

Watching the Progress

- Repo (code):
  - https://github.com/rightincode/ViewPointReader
- Xamarin:
  - https://docs.microsoft.com/en-us/xamarin/
  - https://github.com/xamarin/xamarin-android
  - https://github.com/xamarin/xamarin-macios
  - https://docs.microsoft.com/en-us/xamarin/xamarin-forms/
  - https://github.com/xamarin/Xamarin.Forms
- Azure:
  - Azure App Service:
    - https://docs.microsoft.com/en-us/azure/app-service/
  - Mobile Apps:
    - https://docs.microsoft.com/en-us/azure/app-service-mobile/
  - Azure Cognitive Services:
    https://docs.microsoft.com/en-us/azure/cognitive-services/
- ML.NET:
  - https://docs.microsoft.com/en-us/dotnet/machine-learning/
  - https://devblogs.microsoft.com/cesardelatorre/what-is-ml-net-1-0-machine-learning-for-net/