

Serverless: a new way to build modern applications

IBM Developer

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Hello and Welcome 🙌

1. Serverless – a new way to build modern applications
2. Benefits
3. Use cases
4. Things to consider
5. Resources
6. Demo

“Serverless” name 🤢

Every presentation talk starts “well, there are actually servers....” 🧑. No magic 🧙



Serverless is...

Many sources define serverless just as Functions as a Service (FaaS)/cloud functions

Serverless is an approach to building *modern** applications

Serverless consists of:

1. APIs/managed services
2. FaaS/cloud functions (or just functions)

Examples of APIs or managed services

- **Google Maps API** for location
- **Cloudinary** for image manipulation
- **Auth0** or **Okta** for authentication
- **Twilio/SendGrid** for SMS/email communication
- **Stripe** for payments
- **MongoDB Atlas** or **Cloudant** for database
- **DocuSign** or **HelloSign** for e-signatures
- **Watson Assistant** or **Dialogflow** for chatbots
- **Cloudflare** for DNS
- Thousands of other [name] as a service

Serverless is an approach to building modern applications

Use APIs/managed services as much as you can, glue together all the backend services from a collection of providers

Use functions only when you have to

But what's nice, you have APIs/managed services and now you also have managed functions (code)

What is cloud functions?

It's a cloud compute model where you put your code into a function (a cloud function) and the function is executed on-demand, on per-request basis (on the server 😊)

Your function is triggered by a client, for example HTTP request

Can also be triggered due to an event (event-based):

- Database is updated
- Push notification is sent to a device
- Periodic (cron)
- Custom trigger (Webhooks)

Benefits

Don't worry about servers

Super awesome and important ⚡

Servers are not your problem

You don't need to provision, maintain, <insert-what-you-do> servers

You work on code and function/application logic

Hint: sounds very similar when using APIs 😜

Benefits

Pay-per-invocation

A big big benefit ⚡

Pay per invocation and memory used

Don't pay for servers running 24/7

Providers offer generous free tiers

- Small application – you can probably run it for free
- Once you do start paying – you will probably pay little

Use calculators to estimate cost

Hint: sounds very similar when using APIs 😜

Benefits

Scaling

Also a big big benefit 💪

Scaling is not simple (usually)

With functions, it's someone else's problem! 🙄

Run your function thousands of times in a fraction of a second, or once a week.

Functions automatically scale when demand grows up ↗ (and then disappear when demand drops)

Retail example: Cyber Monday

Providers in this space

Amazon Lambda

IBM Cloud Functions

Microsoft Azure

Google Cloud Functions

Other players

- Twilio Functions
- Webtasks (Auth0)
- IronFunctions (Iron.io)
- StdLib
- And many more...

Benefits

Language support (polyglot)

Amazon Lambda

- Node.js, Python, Java, C# and Go

IBM Cloud Functions

- Node.js, Python, Java, PHP and Swift
- Any language via Docker
- Based on open source OpenWhisk serverless platform, can create your own serverless platform

Microsoft Azure

- C#, F#, Node.js (in GA)
- Java, Python, PHP, TypeScript, Bash, PowerShell (experimental mode)

Google Cloud Function

- Node.js

Things to consider

Execution time limit

Amazon Lambda – 515 minutes

IBM Cloud Functions – 10 minutes

Microsoft Azure – 10 minutes

Google Cloud Functions – 9 minutes

Things to consider

Latency

Cold start (when functions starts for the first time or after a long period of not being active)

Keep your function warm with schedule invocations

- Sounds like cheating a little bit

Vendors should have a solution to cold starts (Serverlessconf)

Type of application you are building is very important ➡️

- Cold start is OK for an internal backend office application
- Probably not OK if you are sending a rocket into space

Things to consider

Functions are stateless

- Need to have access to a database to save data between requests

Can you develop locally?

- AWS, Microsoft and IBM offers tools to build and test functions locally (like CLI or IDE's)

Can you easily monitor your functions?

- IBM Cloud Functions uses built-in Kibana for logs

Recursion and loops

- Avoid recursion (function calling itself) and long-running loops
- Setup a billing alarm to notify in case your account has reached a pre-set limit 

Security

- Serverless is secure by default because it is someone else problem 
- In general, follow recommended security practices for your application. For example, give the least access needed

Things to consider

Do one thing!

Each function should do just one thing

When a function tries to do too many things it becomes a "mini-monolith" 😱

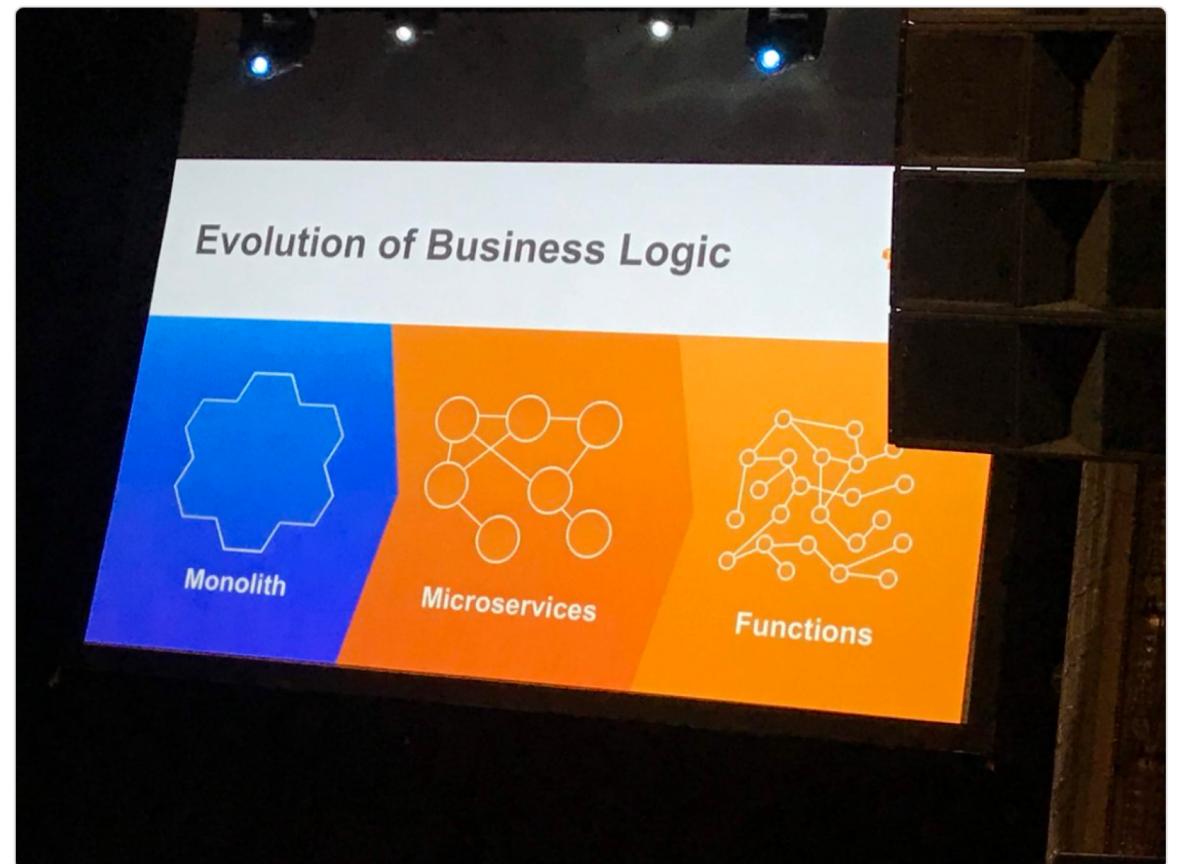
Multiple functions can be placed in a sequence (with passing data to each other)



Max Katz

@maxkatz

.@adrianco Evolution of Business Logic
#serverless #ServerlessConf



2:10 PM - 31 Jul 2018

Things to consider

Other services

Your function might scale but what about other APIs and managed services? Make sure services you choose will also scale 

Cloud functions are good for

Mobile/web/bot backend

Static web sites, contact forms

Automated backups, uptime check, policy enforcement tasks

Background jobs, batch processing, PDF/image generation

Data processing like ETL

- (Extract-Convert-Transform (convert data into another format/type))

When you don't need the server running all the time

When not to use cloud functions

Customization/flexibility/control beyond what functions allow

Very long running task that can't be broken into smaller functions (> function execution time)

Super complex compute, high memory requirements

Super fast response time

Service availability requirements > cloud functions service availability

Prototyping (really awesome)

Start your application with cloud functions + APIs

Hack for a little bit and see serverless is a good fit

Prototype an API

If you need more customization/flexibility, then you can go the container route

Resources

Lists

- <https://github.com/anaibol/awesome-serverless>
- <https://github.com/pmuens/awesome-serverless>
- <https://twitter.com/tmclaughbos/lists/serverless>

Email newsletter

- <https://serverless.email/>

Code Patterns

- <https://developer.ibm.com/patterns/category/serverless/>

Serverless architecture

- <https://martinfowler.com/articles/serverless.html>

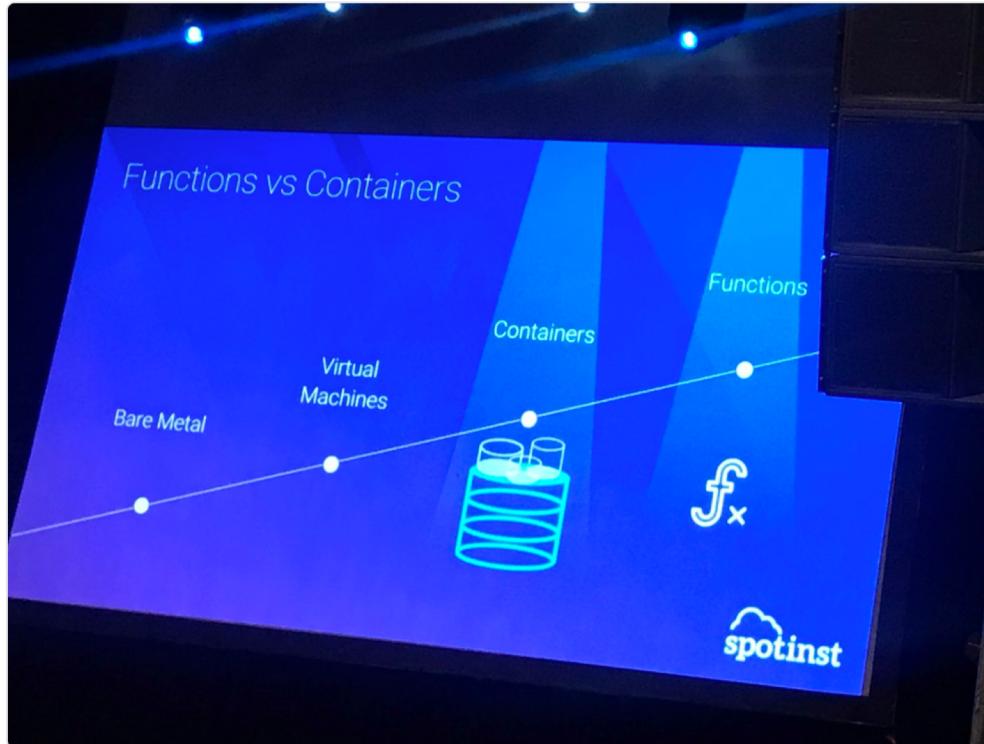
Containers vs. Serverless



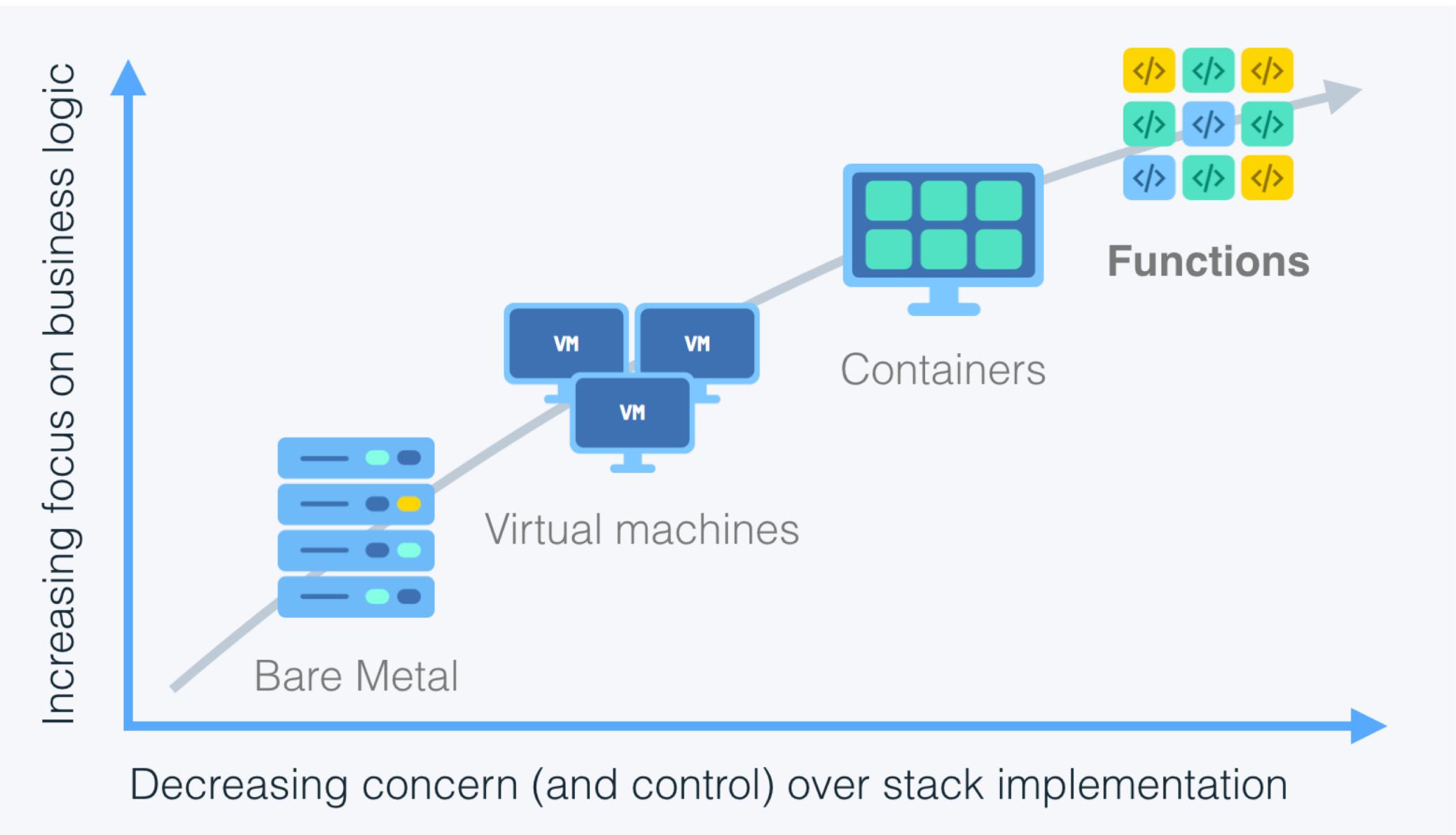
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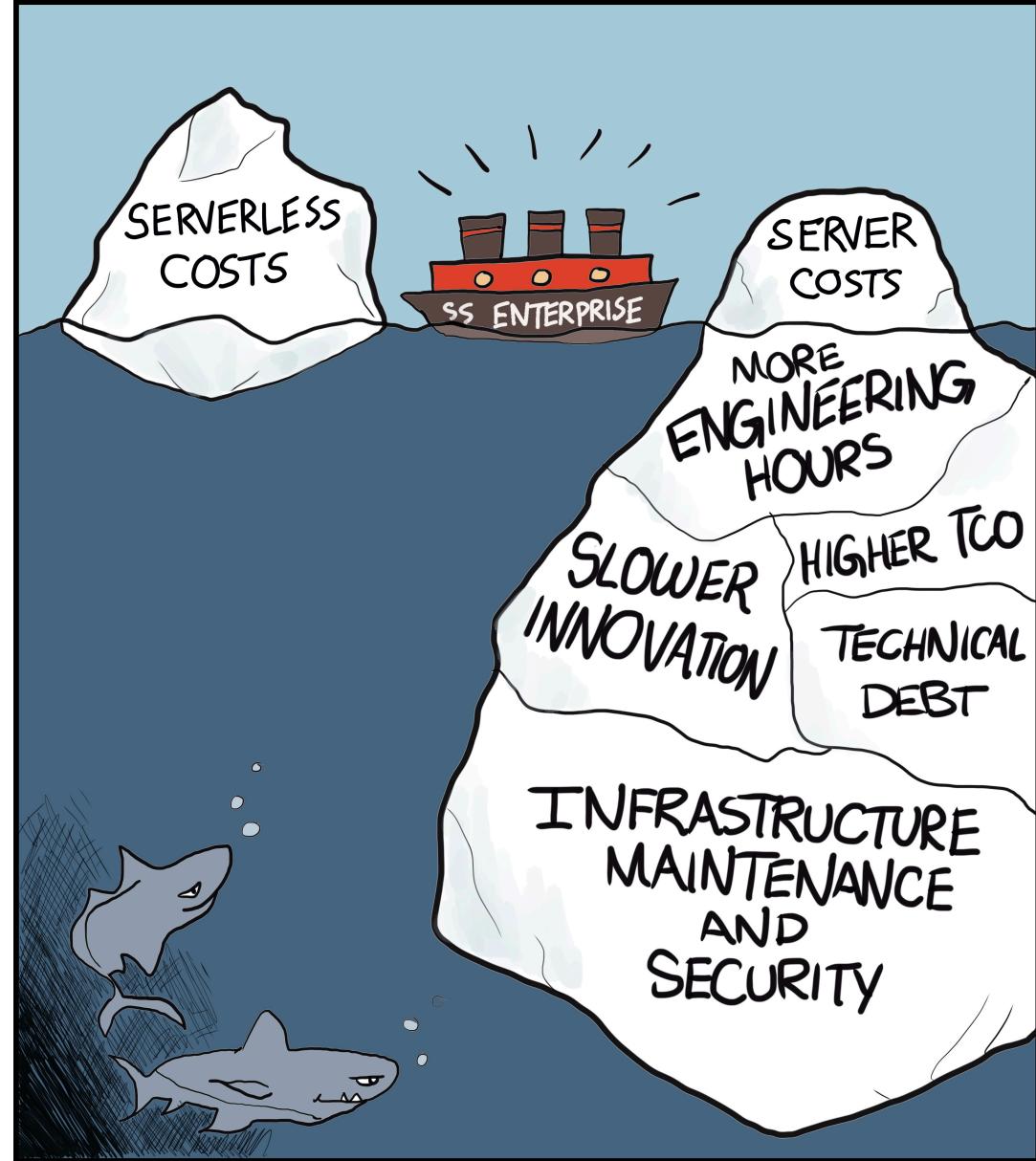
@maxkatz

Bare metal → Virtual machines →
Containers → Functions #serverless
#ServerlessConf via @AmiramShachar



11:51 AM - 1 Aug 2018





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"Steer away from serverless! Full speed ahead!"

Source: <https://www.trek10.com/blog/business-case-for-serverless/>

Serverless is (almost done)...

Serverless is an approach to building *modern* applications

Serverless consists of:

1. APIs/managed services
2. FaaS/cloud functions (or just functions)

Serverless architecture allows developers to focus on the application (value) rather than what kind of resources are needed to run the application. It allows to build applications faster.

Build your first IBM Cloud Function:
<https://ibm.biz/BdYLAe>

Follow this easy tutorial:
<https://wp.me/p9H05-2Cv>

Code Patterns

Technology ▾

Industry ▾

Deployment Models ▾

Sort by: Newest First ▾

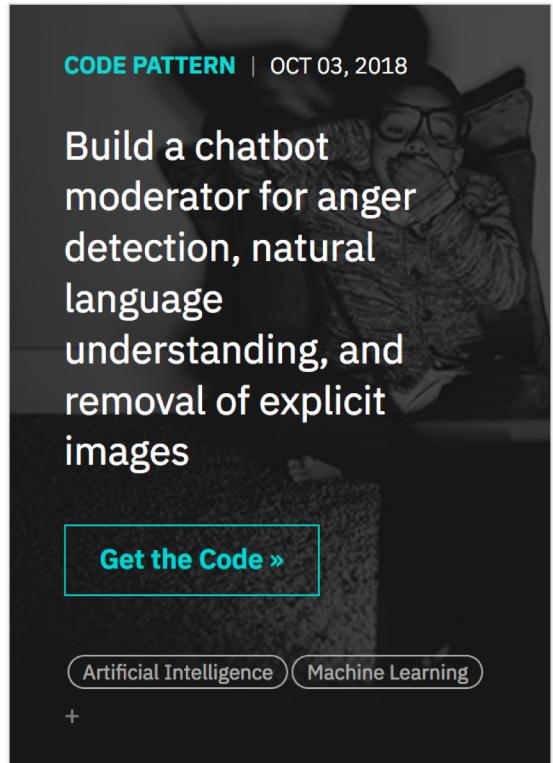
Serverless ×

CODE PATTERN | OCT 03, 2018

Build a chatbot moderator for anger detection, natural language understanding, and removal of explicit images

[Get the Code »](#)

(Artificial Intelligence) (Machine Learning)
+

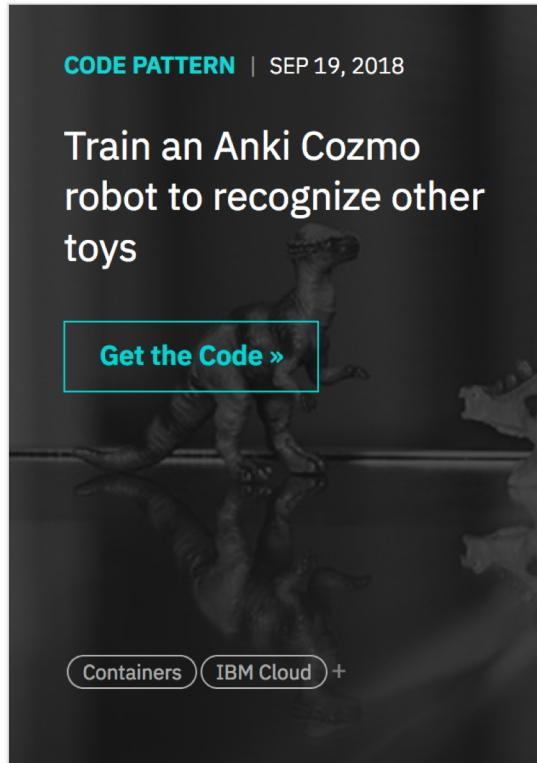


CODE PATTERN | SEP 19, 2018

Train an Anki Cozmo robot to recognize other toys

[Get the Code »](#)

(Containers) (IBM Cloud) +

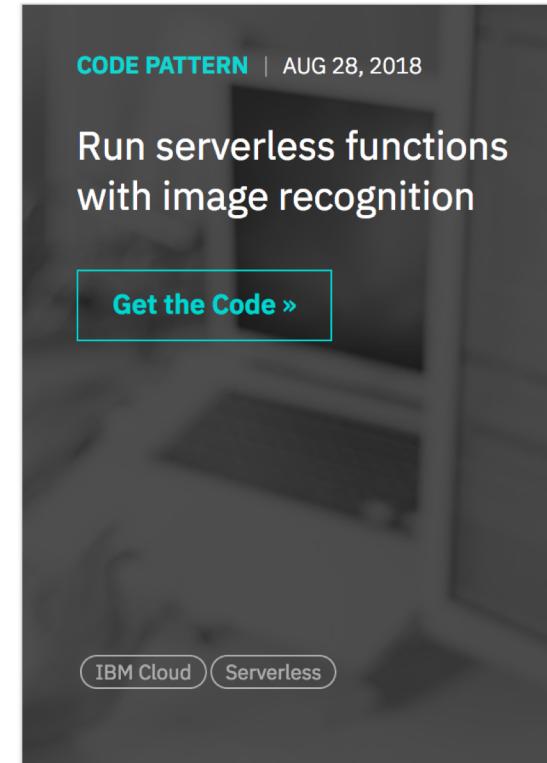


CODE PATTERN | AUG 28, 2018

Run serverless functions with image recognition

[Get the Code »](#)

(IBM Cloud) (Serverless)

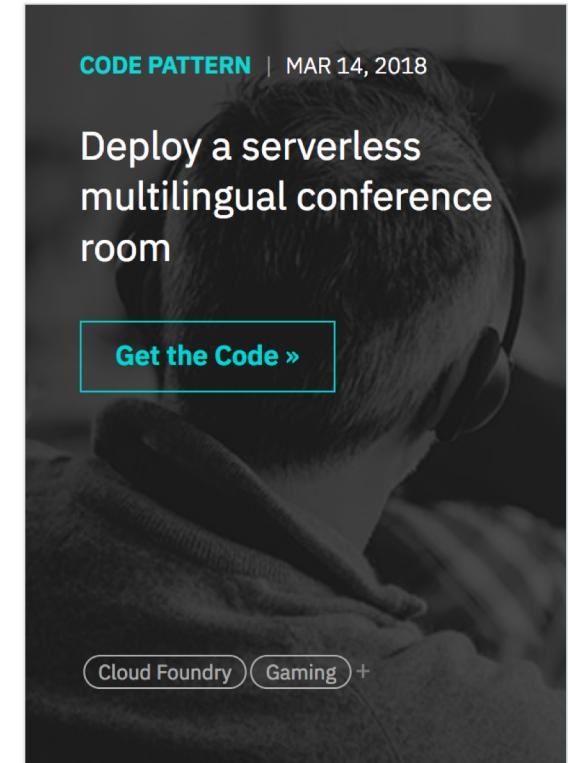


CODE PATTERN | MAR 14, 2018

Deploy a serverless multilingual conference room

[Get the Code »](#)

(Cloud Foundry) (Gaming) +



CODE PATTERN | FEB 21, 2018

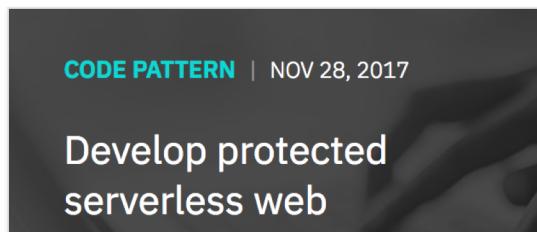
Create a podcast downloader using

IBM



CODE PATTERN | NOV 28, 2017

Develop protected serverless web



CODE PATTERN | NOV 27, 2017

Analyze an image and send a status alert



CODE PATTERN | NOV 16, 2017

Analyze industrial equipment for defects





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Calendar

Upcoming

Past

24
OCT

Wednesday, October 24, 2018, 9:30 AM

Online Meetup: Serverless - A New Way to Build Modern



Hosted by [Lisa J.](#)



Thank you

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