

Trigger-Action Programming in the Wild:

An Analysis of 200,000 **IFTTT** Recipes



Blase Ur, Melwyn Pak Yong Ho, Stephen Brawner, Jiyun Lee,
Sarah Mennicken, Noah Picard, Diane Schulze, Michael Littman



BROWN

Carnegie
Mellon
University



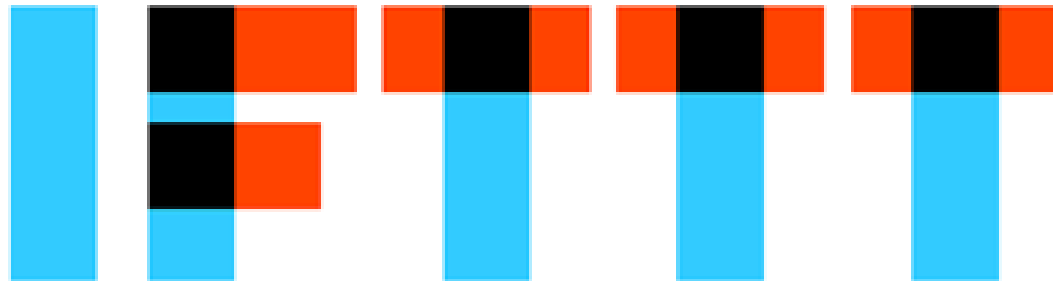
Universität
Zürich^{UZH}



2016 #chi4good

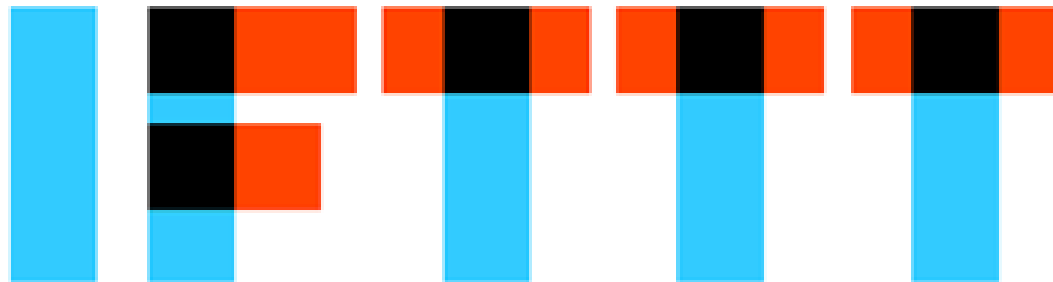


Trigger-Action Programming



if this then that

Trigger-Action Programming



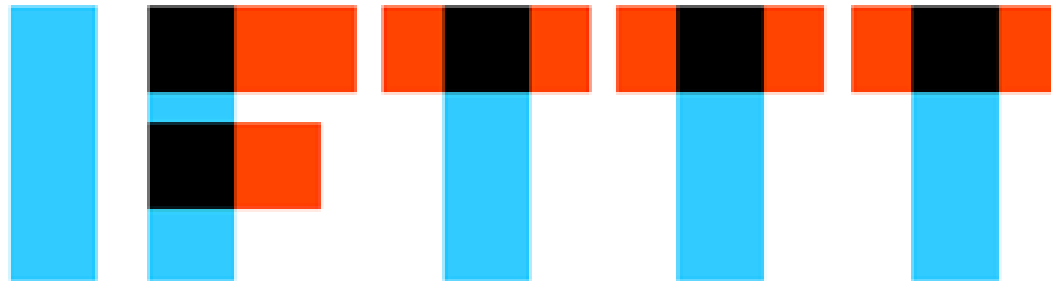
Recipe

if this then that

Trigger

Action

Trigger-Action Programming



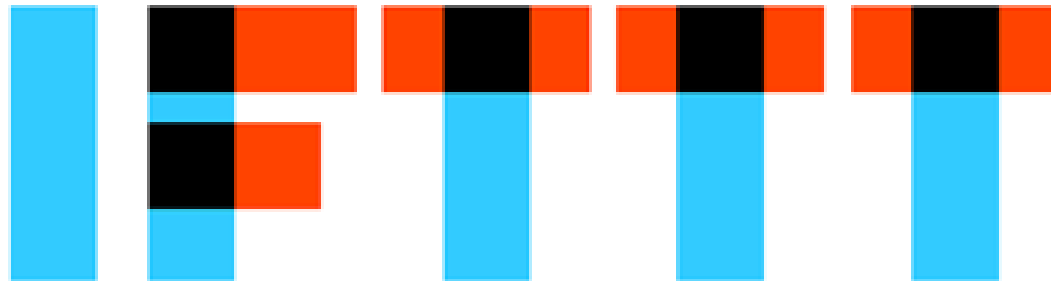
Recipe

if this then that

Trigger

Action

Trigger-Action Programming



Recipe

if this then that

Trigger

Action

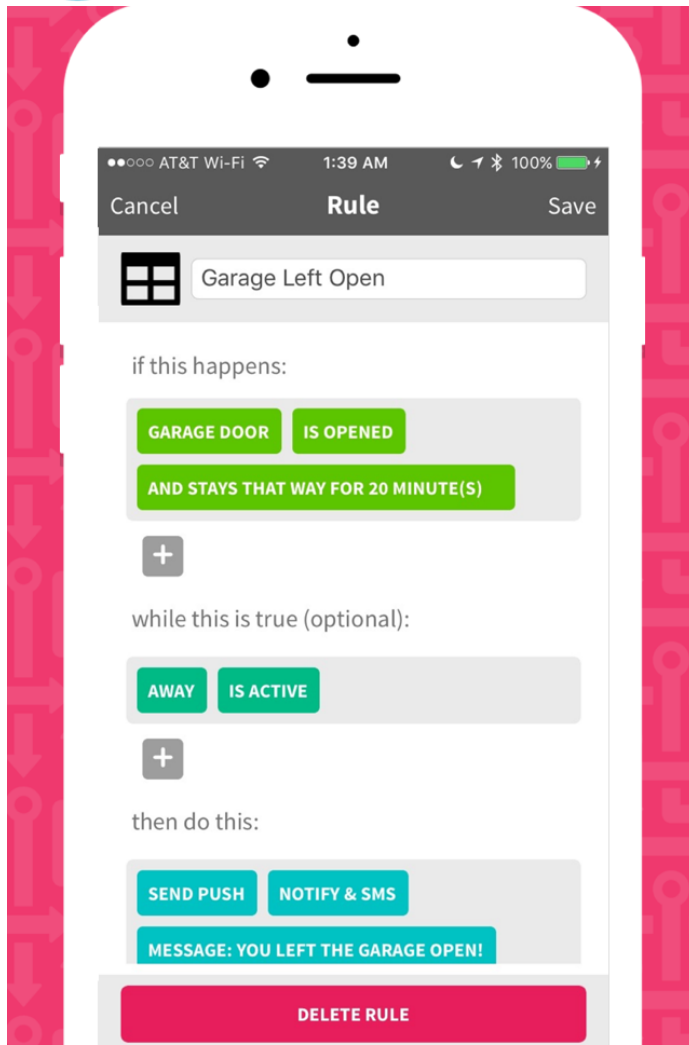
Trigger-Action Programming



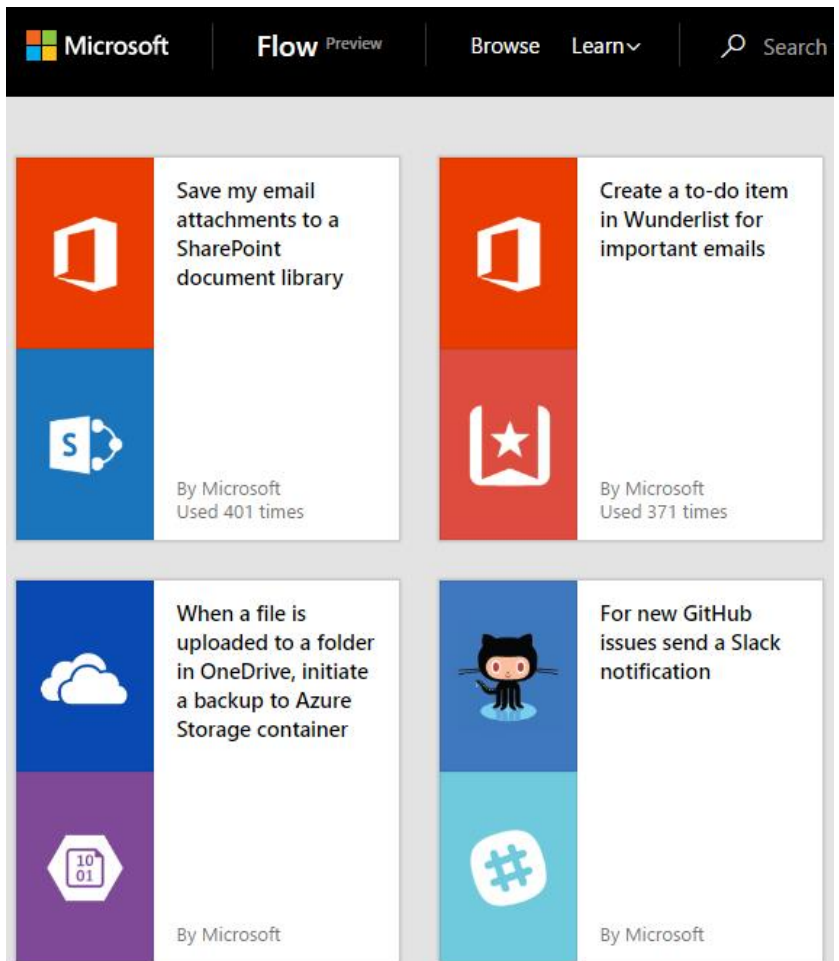
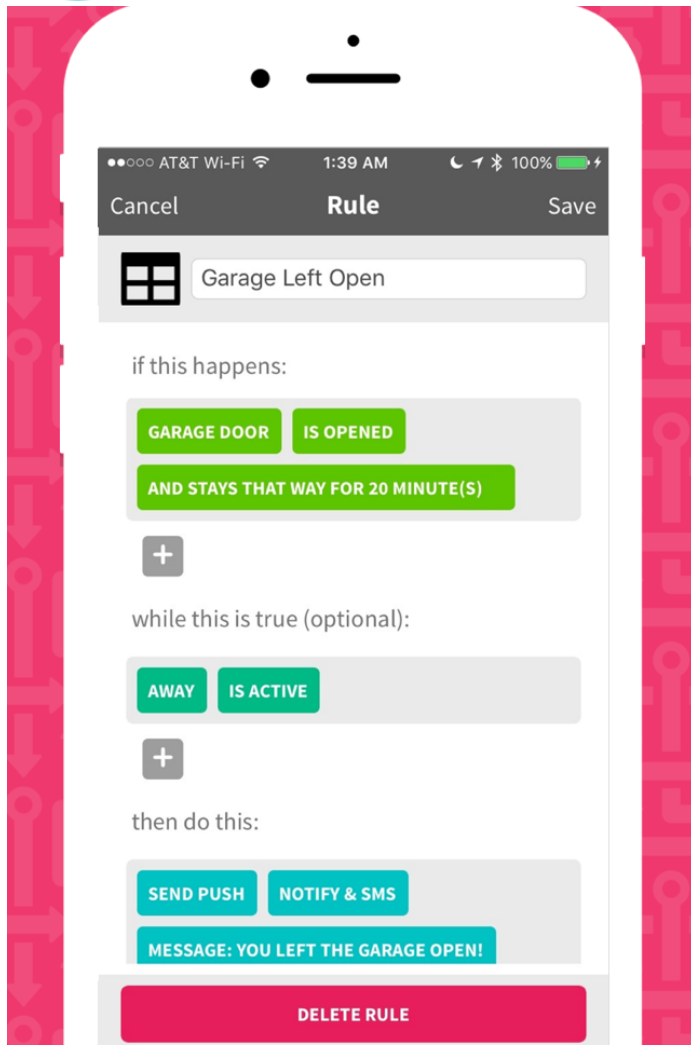
Trigger-Action Programming



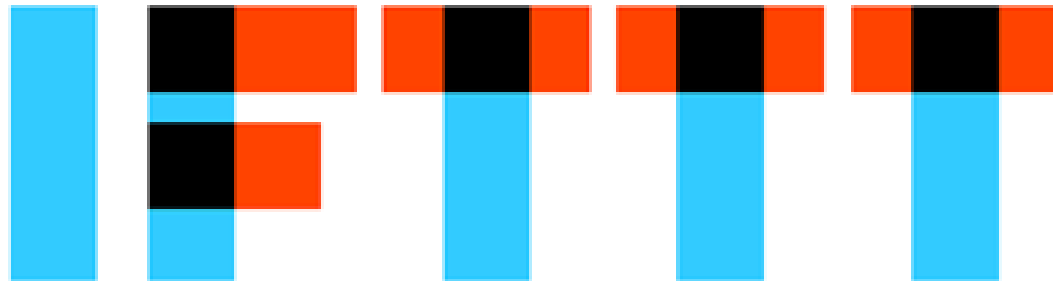
Trigger-Action Programming



Trigger-Action Programming



Trigger-Action Programming



if this then that

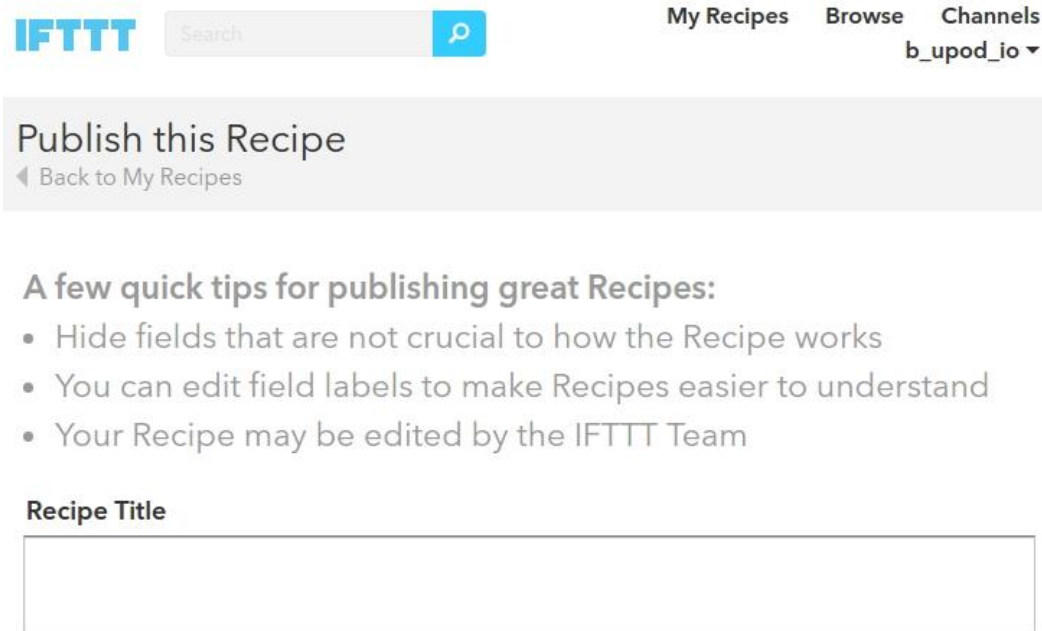
What are people
creating on ?

Methodology

- Collect all publicly shared IFTTT recipes

Methodology

- Collect all publicly shared IFTTT recipes



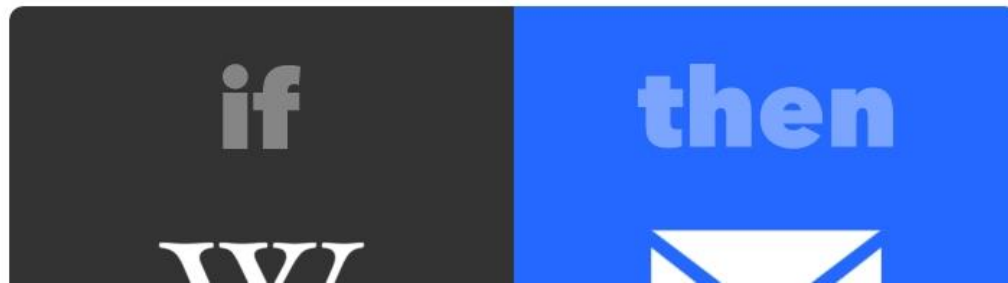
IFTTT Search My Recipes Browse Channels b_upod_io ▾

Publish this Recipe
◀ Back to My Recipes

A few quick tips for publishing great Recipes:

- Hide fields that are not crucial to how the Recipe works
- You can edit field labels to make Recipes easier to understand
- Your Recipe may be edited by the IFTTT Team

Recipe Title



Methodology

- Collect all publicly shared IFTTT recipes
 - Using Selenium & ChromeDriver

Methodology

- Collect all publicly shared IFTTT recipes
 - Using Selenium & ChromeDriver
 - As of September 6, 2015

Methodology

- Collect all publicly shared IFTTT recipes
 - Using Selenium & ChromeDriver
 - As of September 6, 2015
 - Compare to 2013 dataset (CHI 2014)

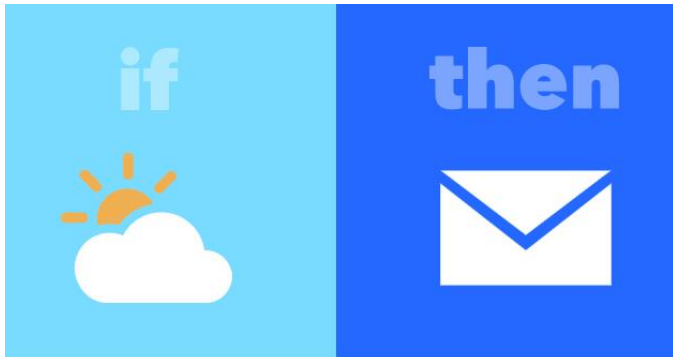
Methodology

- Collect all publicly shared IFTTT recipes
 - Using Selenium & ChromeDriver
 - As of September 6, 2015
 - Compare to 2013 dataset (CHI 2014)
- Characterize recipes & ecosystem

Methodology

- Collect all publicly shared IFTTT recipes
 - Using Selenium & ChromeDriver
 - As of September 6, 2015
 - Compare to 2013 dataset (CHI 2014)
- Characterize recipes & ecosystem
- Share dataset with other researchers

Example



Get an email if there will be rain in your area tomorrow

by [solomakhin](#)

 88k adds

Trigger

Tomorrow's forecast calls for

This Trigger monitors changes in tomorrow's forecasted weather condition.

 Condition

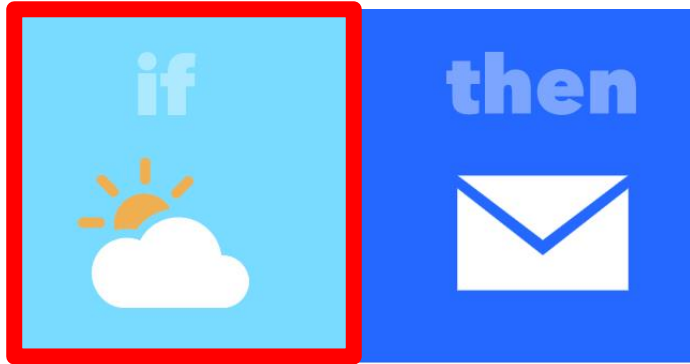
Rain ▾

Action

Send me an email

This Action will send you an HTML based email. Images and links are supported.

Example: Trigger Channel



Get an email if there will be rain in your area tomorrow

by [solomakhin](#)

 88k adds

Trigger

Tomorrow's forecast calls for

This Trigger monitors changes in tomorrow's forecasted weather condition.

 Condition

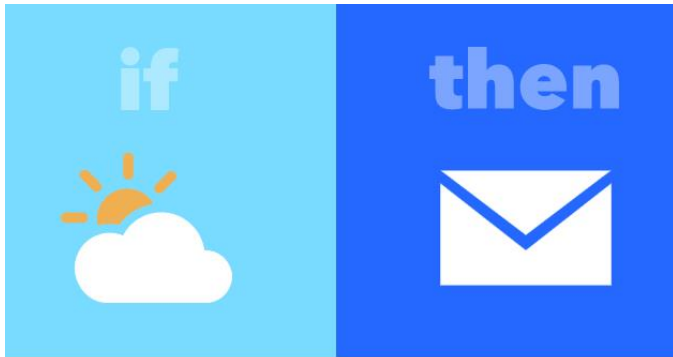
Rain ▾

Action

Send me an email

This Action will send you an HTML based email. Images and links are supported.

Example: Trigger



Get an email if there will be rain in your area tomorrow


by [solomakhin](#)

 88k adds

Trigger

Tomorrow's forecast calls for

This Trigger monitors changes in tomorrow's forecasted weather condition.

 Condition

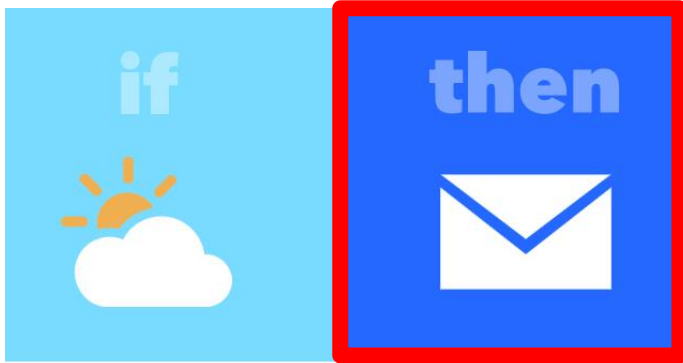
Rain ▾

Action

Send me an email

This Action will send you an HTML based email. Images and links are supported.

Example: Action Channel



Get an email if there will be rain in your area tomorrow

by [solomakhin](#)

 88k adds

Trigger

Tomorrow's forecast calls for

This Trigger monitors changes in tomorrow's forecasted weather condition.

 Condition

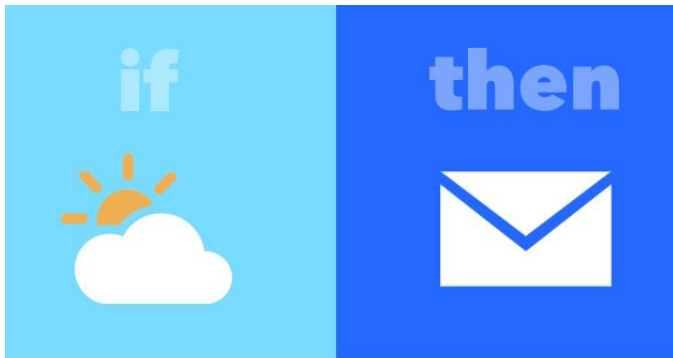
Rain ▾

Action

Send me an email

This Action will send you an HTML based email. Images and links are supported.

Example: Action



Get an email if there will be rain in your area tomorrow

by [solomakhin](#)

 88k adds

Trigger

Tomorrow's forecast calls for

This Trigger monitors changes in tomorrow's forecasted weather condition.

 Condition

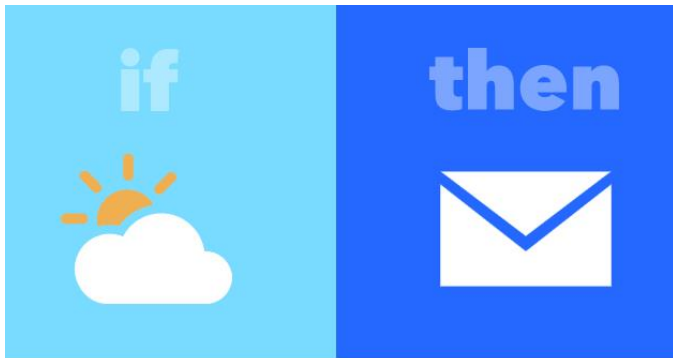
Rain ▾

Action

Send me an email

This Action will send you an HTML based email. Images and links are supported

Example: Author



Get an email if there will be rain in your area tomorrow

by **solomakhin**

88k adds

Trigger

Tomorrow's forecast calls for

This Trigger monitors changes in tomorrow's forecasted weather condition.

 Condition

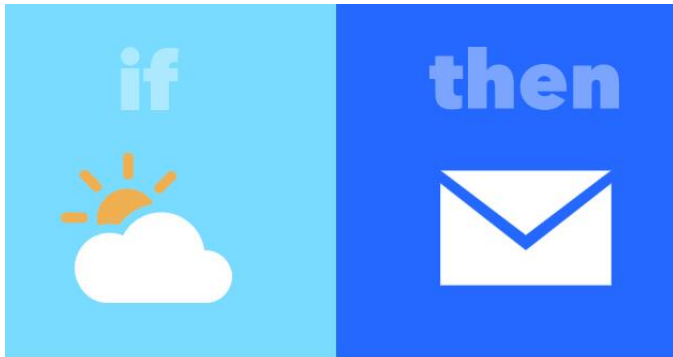
Rain ▾

Action

Send me an email

This Action will send you an HTML based email. Images and links are supported.

Example: Title



Get an email if there will be rain in your area tomorrow

by [solomakhin](#)

 88k adds

Trigger

Tomorrow's forecast calls for

This Trigger monitors changes in tomorrow's forecasted weather condition.

 Condition

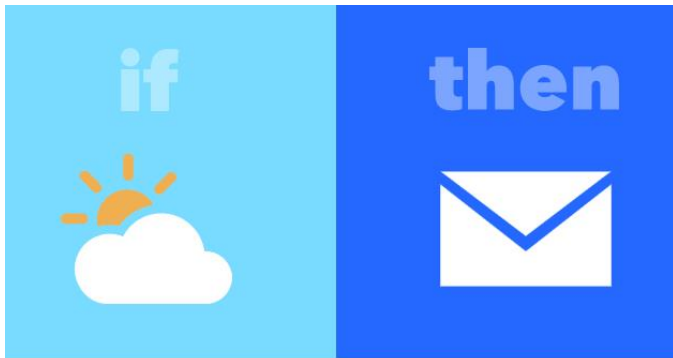
Rain ▾

Action

Send me an email


This Action will send you an HTML based email. Images and links are supported.

Example: Adoptions



Get an email if there will be rain in your area tomorrow

by solomakhin

 88k adds

Trigger

Tomorrow's forecast calls for

This Trigger monitors changes in tomorrow's forecasted weather condition.

 Condition

Rain ▾

Action

Send me an email

This Action will send you an HTML based email. Images and links are supported.

Key Characteristics

Key Characteristics

- Huge growth from 2013 → 2015

Key Characteristics

- Huge growth from 2013 → 2015
 - 67,820 recipes → 224,590 recipes

Key Characteristics

- Huge growth from 2013 → 2015
 - 67,820 recipes → 224,590 recipes
 - 35,495 authors → 106,452 authors

Key Characteristics

- Huge growth from 2013 → 2015
 - 67,820 recipes → 224,590 recipes
 - 35,495 authors → 106,452 authors
- Many authors, but few are prolific
 - Only 2.5% of authors shared 10+ recipes

Key Characteristics

- Huge growth from 2013 → 2015
 - 67,820 recipes → 224,590 recipes
 - 35,495 authors → 106,452 authors
- Many authors, but few are prolific
 - Only 2.5% of authors shared 10+ recipes
- Many connections are being made

Key Characteristics

- Huge growth from 2013 → 2015
 - 67,820 recipes → 224,590 recipes
 - 35,495 authors → 106,452 authors
- Many authors, but few are prolific
 - Only 2.5% of authors shared 10+ recipes
- Many connections are being made
 - 15,961 unique trigger-action combinations

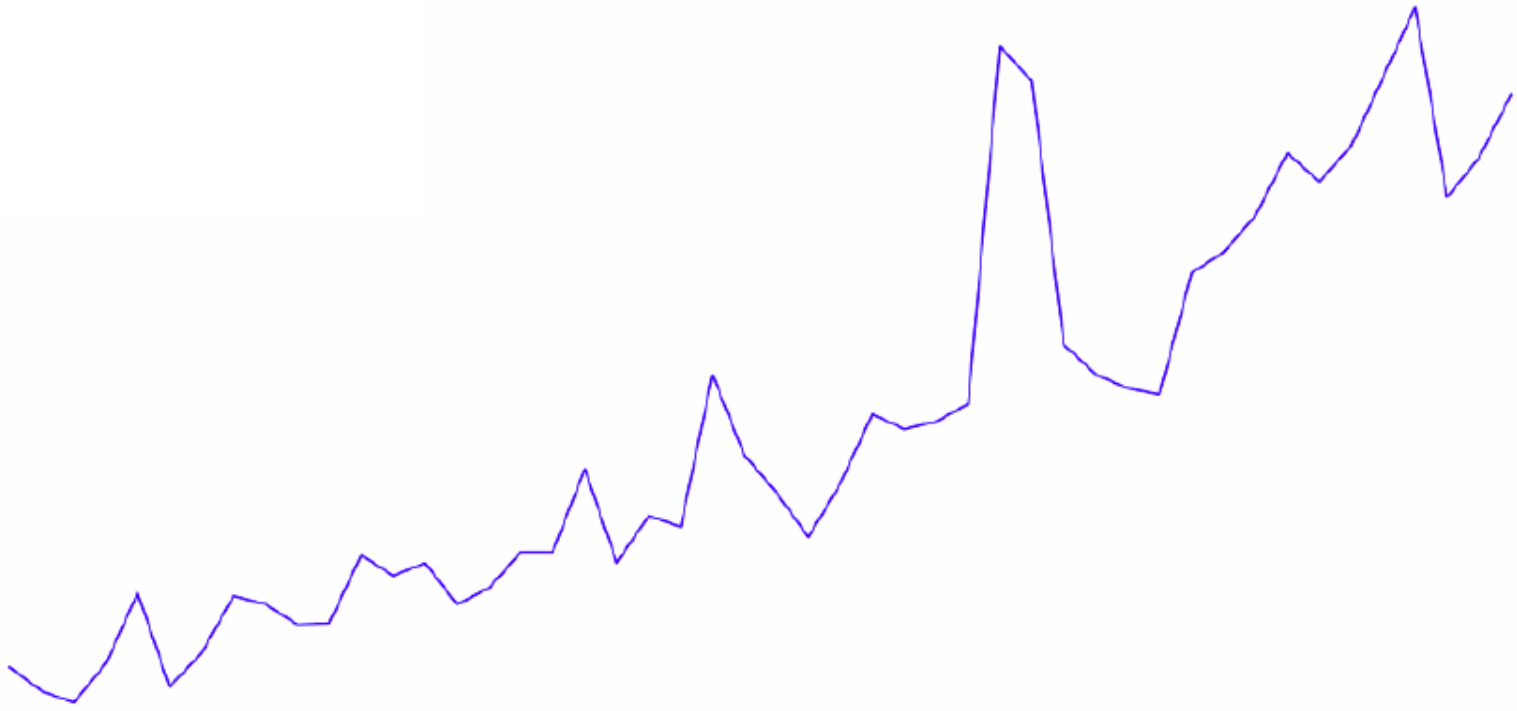
Key Insights

Key Insights

- IFTTT is big...and growing

Key Insights

- IFTTT is big...and growing

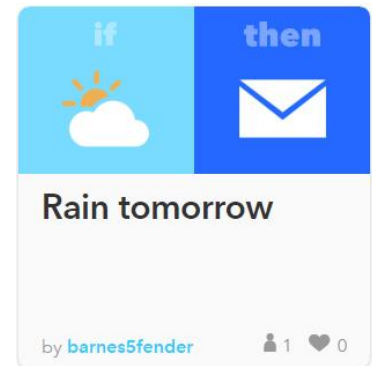
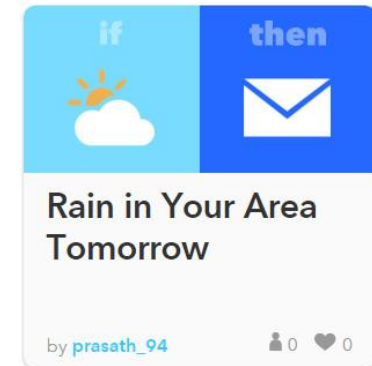
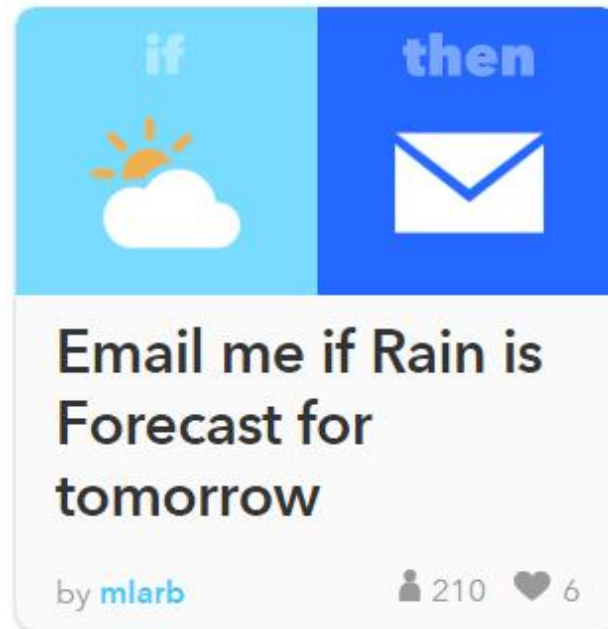


Key Insights

- IFTTT is big...and growing
- Adoptions vs. duplicated functionality

Key Insights

- IFTTT is big...and growing
- Adoptions vs. duplicated functionality

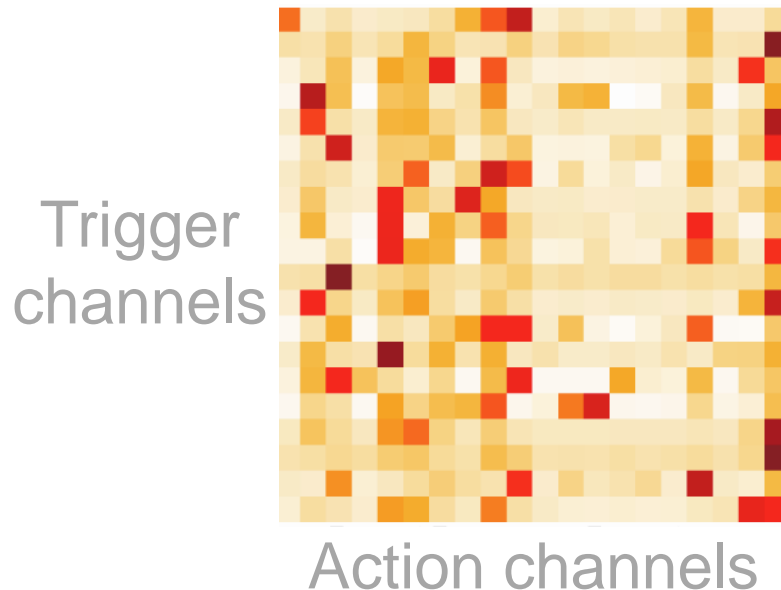


Key Insights

- IFTTT is big...and growing
- Adoptions vs. duplicated functionality
- Many diverse connections

Key Insights

- IFTTT is big...and growing
- Adoptions vs. duplicated functionality
- Many diverse connections



Key Insights

- IFTTT is big...and growing
- Adoptions vs. duplicated functionality
- Many diverse connections
- ????????????????

Trigger-Action Programming

in the Wild:

An Analysis of 200,000  Recipes

Download the dataset at
www.upod.io/datasets

Blase Ur, Melwyn Pak Yong Ho, Stephen Brawner, Jiyun Lee,
Sarah Mennicken, Noah Picard, Diane Schulze, Michael Littman



BROWN

Carnegie
Mellon
University



Universität
Zürich^{UZH}



2016 #chi4good