Toward
Collaborative Ideation at Scale

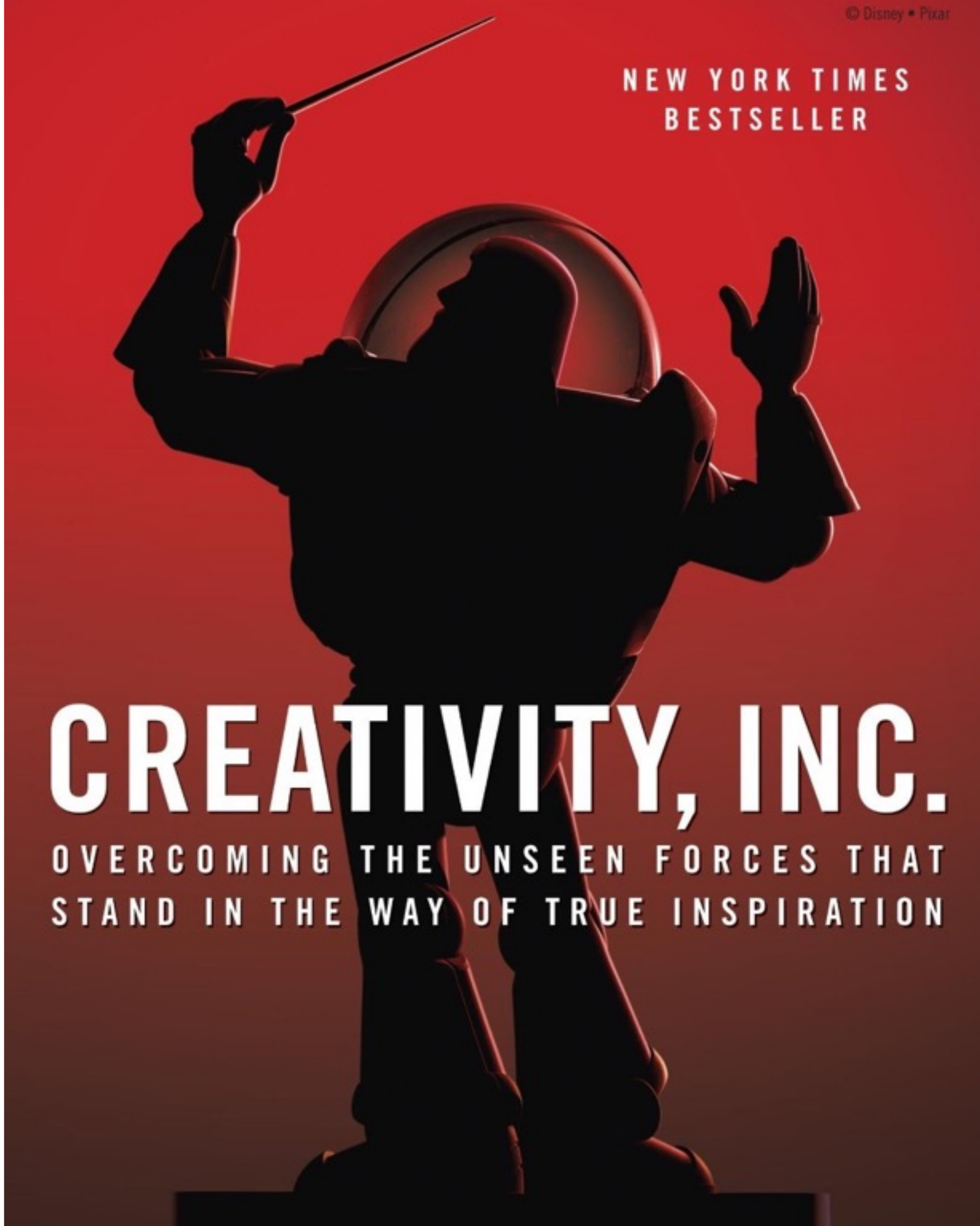
Leveraging ideas from others to generate more creative and diverse ideas

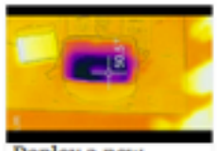
Pao Siangliulue (Harvard SEAS)
Kenneth C. Arnold (Harvard SEAS)
Krzysztof Z. Gajos (Harvard SEAS)
Steven P. Dow (CMU)

“The notion of ideas as this singular thing is a fundamental flaw.

There are so many ideas that what you need is that group behaving creatively.”

- Ed Catmull





Deploy a new Arterial Cooling Base Layer system designed by a First Responder originally developed for tactical applications and elite athletes

Update: We've submitted our expression of interest to USAID!...

Justin 08:20, Nov 02, 2014 45

PPE Design Retrofit

Same gear made user-simple: * Inspired by extreme sports and tough...

Nicole Daphne Tricoukes 12:49, Oct 13, 2014 56

Patient-centric GIS app to track real-time hospital bed availability and support services integrated with interactive forum for patients and survivors.

Our vision is that the website www.myhealthafrica.com (and mobile a...

mDoc 04:28, Oct 09, 2014 22

FREE PHONE CREDIT FOR GIVING DATA! Help educate, survey, collect data via automated messages & texts. Everyone needs and wants more phone credit in West Africa.

Broaden the reach of text messages/automated messages/surveys ...

Hillary Griffith 16:49, Oct 19, 2014 4

***Coolpak* - Quick, Easy, Low-Cost, Rapid -Deploy HAZMAT Suit Cooling.**

Hey Guys, If you modify small/medium-size backpacks with a...

Nin They 20:32, Oct 09, 2014 37

Hospital bed with removable bed skins using snap track retainer. Stretching and securing protective material Rubber/Plastic/Fabric, etc. Bed built on site to existing field conditions. See drawing # 3

Removable Bed skins. Use a snap track retainer to stretch and secure...

Howard Boyle 01:09, Oct 17, 2014 6

Ebola detection

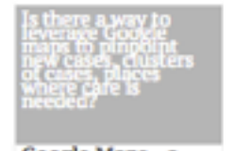
If is an individual thermometer is activated when the temperature of the...

Zoe Mayemba 14:30, Oct 25, 2014 5

Let's play.

According to healthcare workers the first step to treat Ebola starts by...

Nazlican Goksu 06:45, Nov 05, 2014



Google Maps - a ubiquitous tool accessible worldwide to help track cases

Is there a way to leverage Google maps to pinpoint new cases, clusters...

Victoria Dow 11:41, Oct 07, 2014 11

Equipping and Empowering the Care Community to Fight Ebola

My idea is to improve the present Personal Protective Equipment (PPE)...

Guichingdin Palmet 02:03, Oct 08, 2014 20

Ebola has a weakness that current PPE doesn't really exploit.

Right now you're probably using the giant blue, all plastic suits that block out...

Kutter McNeil 06:24, Oct 10, 2014 5

Ebola information on sachet water bags

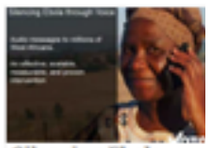
Sachet water is widely distributed and consumed in the affected regions, al...

Carolin Weisser 05:24, Oct 09, 2014 24

Amplify survivors' stories

Having Ebola survivors share experiences can be a powerful way to,...

Sheldon Allen 13:01, Oct 12, 2014 38



Silencing Ebola through Voice – Combing Radio and a Voice-Powered Mobile Information Subscription Service to Inform Tens of Millions of West African Household and Stop the Epidemic

Misintormation about Ebola, particularly in rural areas, is a major... .

Kevin Schuster 11:42, Oct 19, 2014 9

Wear already available Phase Change Cooling Garments under PPE - Refreezeable in Ice Water or Refrigerator

Already in use by Firefighters, Surgeons, & Military these cooling vests...

Jab Thorn 07:35, Oct 20, 2014 12

Knowmore LIB: Building Resilience and Defeating Ebola through Civic Education

The "Knowmore LIB" project aims to sensitize all Liberians on the,... .

Brooks Marmon 06:40, Oct 10, 2014 3

Idea's for Suits

Could we incorporate something into the design of the suits...

James Moynagh 03:47, Oct 17, 2014 1

Free telemedicine platform for West Africa

The Doctor Gratis mobile application can be used to seek free consultations...

Jacques Durand 19:06, Oct 07, 2014 9

EVDnet - Mobile Database System that links Patients, Contacts, Human Resources, Logistics, and GIS data

EVDnet is a data sharing network for front-line aid workers involved i...

William Faria 05:02, Oct 08, 2014 3

Mobilize African Art community to help communicate properly to locals dealing with ebola crisis--evaporate unreasonable mistrust

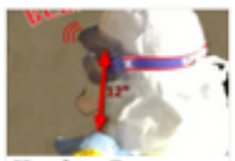
Meaningful local/regional artistic communities with broad appeal t...

Rebecca Buechel 03:42, Oct 19, 2014 6

Helping Keep Healthcare Workers Safe: Strengthening Training by Creating Digital Simulations to Supplement WHO Training Materials

We are working with the IMCI-IMAI Alliance that created training materials,...

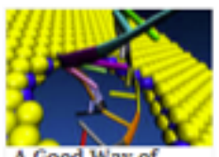
beth kolko 21:31, Oct 14, 2014 3



Hand-to-Face Proximity Alarm

One risk that surfaces is from habits we don't even think about. My no,...

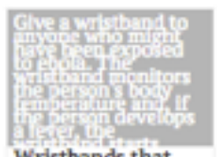
Travis Good 15:43, Oct 15, 2014 5



A Good Way of Preventing Is The Only Way Of Inhibiting A Deadly Disease !

This is about the protection of the people caring for Ebola patients. The...

Evelina Cohn Ph.D. 14:10, Oct 16, 2014 34



Wristbands that detect fevers will allow much more efficient contact-tracing at scale.

Give a wristband to anyone who might have been exposed to Ebola. The,...

Javed Qadrud-Din 19:08, Oct 16, 2014 7

Boost health worker recruitment

It's critical to have more frontline health providers to help the individual...

Sheldon Allen 06:40, Oct 10, 2014 38

Low cost duct tape removal tab solution for internal set of gloves(Video attached)

Low cost idea for duct tape glove tabs to possibly reduce contamination,... .

Craig Provost 11:04, Oct 18, 2014 6

Mobile Backpack Cooling System With Integrated Hydration System / Hooded Reuseble Vest To Be Worn Under PPE

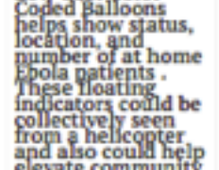
Backpack Mobile Cooling System is designed to be worn under PPE to provi...

Jay Buckalew 11:44, Oct 23, 2014 24

Wall or floor mounted hook and ring system for removal of PPE

Credit to Anna Durbin who suggested one piece PPE suits with no...

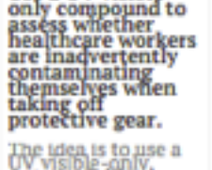
Anthony Davis 12:07, Oct 28, 2014 6



Low Cost Color Coded Balloons helps show status, location, and number of at home Ebola patients . These floating indicators could be collectively seen from a helicopter and also could help elevate community awareness about infection and quarantine.

Cheap mylar color coded balloons could be used to tether onto or next to,... .

Craig Provost 11:29, Oct 20, 2014 11



Use a UV visible-only compound to assess whether healthcare workers are inadvertently contaminating themselves when taking off protective gear.

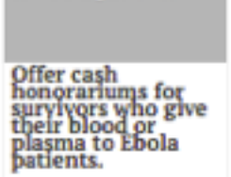
The idea is to use a UV visible-only, water-soluble compound, such as...

David K 12:08, Oct 11, 2014 13

Protect the natural caregivers

We need to protect the natural caregivers-family members of Ebola,...

Rebecca Menon 21:18, Oct 12, 2014 1



Offer cash honorariums for survivors who give their blood or plasma to Ebola patients.

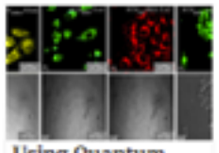
Offer cash honorariums for survivors who give their blood or plas...

Harry Kirsner 20:15, Oct 15, 2014 1

Silk Cocoon

Health personnel, entering the suit through the door made of transpare...,

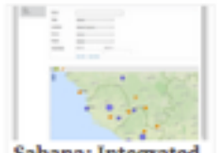
Raul Villaseca 14:55, Oct 16, 2014 16



Using Quantum Dots for Rapid Detection of Ebola Infections

Quantum dots (QD) are nanoparticles that have florescent properties. The QD...

Shashwath Murthy 13:56, Oct 16, 2014 8



Sahana: Integrated Information Platform for Patient Contact Tracing, Logistics, Health Worker and Facility Management

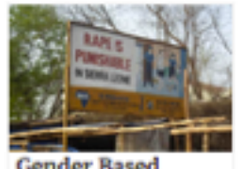
Sahana Open Source Disaster Management Web Application can... .

Michael Howden 16:41, Oct 16, 2014 6

Train and employ Ebola survivors as health workers! They are immune to Ebola so no need for full PPE, and stigmatized in home communities so would probably love to re-make their image as helpers and heroes.

Approximately 20-50% of people who receive supportive care survive Ebola...

Anna Bershteyn 16:33, Oct 08, 2014 9



Gender Based Violence occurs even after survival from Ebola

Women do not have control over thier own bodies. Sperm and breast milk... .

Lynn Lawry 06:06, Oct 16, 2014 7

Retrofit Packaged Goods with Prevention Kits

Packaged goods that can be easily found in local marketplaces can be retrofitted t...

Shane Zhao 16:47, Oct 26, 2014 4

Active or Passive Cooling Built into PPE Clothing or Worn Underneath

The relief of stress and discomfort of wearing PPE in hot and humid... .

jlocke8 . 23:38, Oct 07, 2014 18

Shipping containers repurposed as isolation wards

Construction or renovation of a building is a process which can be costl...,

Kate Cho 19:07, Oct 15, 2014 3

Portable Emergency Glove Disinfectant Bath> Potentially reduce anxiety of infection for heath workers who are working outside clinical/camp setting

Update 11/6/14 We made a quick mock up with a gallon sized Super Ziploc,...

Craig Provost 09:25, Oct 22, 2014 5

Calling Ebola survivors for help.

Ebola survivors are generally immune to future infection with the virus strain tha...

Nazlican Goksu 06:38, Nov 05, 2014

Introducing....the "AEROTARD" COMFORT-VENTILATED SAFETY BODYSUIT.

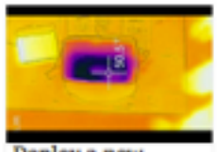
Since so much excellent technology, expensive material,...

Denise Denise 15:48, Oct 21, 2014 26

Patient Ebola Kits - Train locals in the community to become low-skilled healthcare workers! Patient Ebola Kits include instructions and supplies to reduce patient mortality.

Did you know....Ebola is not a death sentence! Many patients are not...

Rupa Raj 19:33, Nov 06, 2014



Deploy a new Arterial Cooling Base Layer system designed by a First Responder originally developed for tactical applications and elite athletes

Update: We've submitted our expression of interest to USAID!...

Justin 08:20, Nov 02, 2014 45

PPE Design Retrofit

Same gear made user-simple: • Inspired by extreme sports and tough...

Nicole Daphne Tricoukes 12:49, Oct 13, 2014 56

Ebola information on sachet water bags

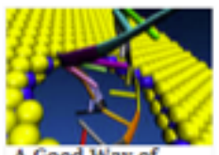
Sachet water is widely distributed and consumed in the affected regions, al...

Carolin Weisser 05:24, Oct 09, 2014 24

Amplify survivors' stories

Having Ebola survivors share experiences can be a powerful way to,...

Sheldon Allen 13:01, Oct 12, 2014 38



A Good Way of Preventing Is The Only Way Of Inhibiting A Deadly Disease !

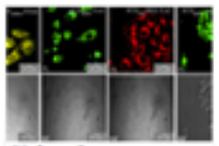
This is about the protection of the people caring for Ebola patients. The...

Evelina Cohn Ph.D. 14:10, Oct 16, 2014 34

Wristbands that detect fevers will allow much more efficient contact-tracing at scale.

Give a wristband to anyone who might have been exposed to ebola. The.....

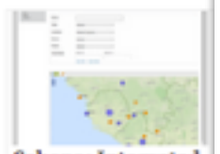
Javed Qadrud-Din 19:08, Oct 16, 2014 7



Using Quantum Dots for Rapid Dejection of Ebola Infections

Quantum dots (QD) are nanoparticles that have florescent properties. The QD...

Shashwath Murthy 13:56, Oct 16, 2014 8

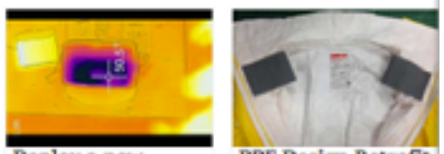


Sahana: Integrated Information Platform for Patient Contact Tracing, Logistics, Health Worker and Facility Management

Sahana Open Source Disaster Management Web Application can...

Michael Howden 16:41, Oct 16, 2014 6

How can these ideas help inspire other people?



Deploy a new Arterial Cooling Base Layer system designed by a First Responder originally developed for tactical applications and elite athletes

Update: We've submitted our expression of interest to USAID!...

Justin 08:20, Nov 02, 2014 45

PPE Design Retrofit

Same gear made user-simple: • Inspired by extreme sports and tough...

Nicole Daphne Tricoukes 12:49, Oct 13, 2014 56

Ebola information on sachet water bags

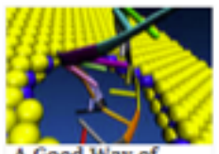
Sachet water is widely distributed and consumed in the affected regions, al...

Carolin Weisser 05:24, Oct 09, 2014 24

Amplify survivors' stories

Having Ebola survivors share experiences can be a powerful way to,...

Sheldon Allen 13:01, Oct 12, 2014 38



A Good Way of Preventing Is The Only Way Of Inhibiting A Deadly Disease !

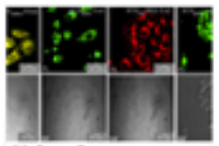
This is about the protection of the people caring for Ebola patients. The...

Evelina Cohn Ph.D. 14:10, Oct 16, 2014 34

Wristbands that detect fevers will allow much more efficient contact-tracing at scale.

Give a wristband to anyone who might have been exposed to ebola. The.....

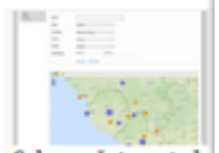
Javed Qadrud-Din 19:08, Oct 16, 2014 7



Using Quantum Dots for Rapid Dejection of Ebola Infections

Quantum dots (QD) are nanoparticles that have florescent properties. The QD...

Shashwath Murthy 13:56, Oct 16, 2014 8



Sahana: Integrated Information Platform for Patient Contact Tracing, Logistics, Health Worker and Facility Management

Sahana Open Source Disaster Management Web Application can...

Michael Howden 16:41, Oct 16, 2014 6

Patient-centric GIS app to track real-time hospital bed availability and support services integrated with interactive forum for patients and survivors.

Our vision is that the website www.myhealthafrica.com (and mobile a...

mDoc 04:28, Oct 09, 2014 22

FREE PHONE CREDIT FOR GIVING DATA! Help educate, survey, collect data via automated messages & texts. Everydhe needs and wants more phone credit in West Africa.

Broaden the reach of text messages/automated messages/surveys ...

Hillary Griffith 16:49, Oct 19, 2014 4

"Coolpak" - Quick, Easy, Low-Cost, Rapid - Deploy HAZMAT Suit Cooling.

Hey Guys, If you really... small/medium-size backpacks with a...

Nfn They 20:32, Oct 09, 2014 37

Hospital bed with removable bed skins using snap track retainer, Stretching and securing protective material

Rubber/Plastic/Fabric, etc. Bed built on site to existing field conditions. See drawing # 3

Removable bed skins using a snap track retainer to stretch and secure...

Howard Boyle 01:09, Oct 17, 2014 6

Ebola detection

It is an individual detection device that detects the temperature of the...

Zoe Meyemba 14:30, Oct 25, 2014 5

Let's play.

According to Australian Workers Union, there is no cure for Ebola there be...

Nathan Gokey 06:45, Nov 05, 2014

Google Maps - a ubiquitous tool accessible worldwide to help track cases

Is there a way to integrate Google Maps with Ebola data? Where new cases, deaths...

Victoria Dow 11:41, Oct 07, 2014 11

Equipping and Empowering the Care Community to Fight Ebola

My idea is to improve the present personal protective equipment (PPE)...

Duchingell n Palmer 02:03, Oct 08, 2014 20

Ebola has a weakness that current PPE doesn't really exploit.

Right now you're probably using the first line of defense, impermeable suits that block out...

Kutter Menell 06:24, Oct 10, 2014 5

Silencing Ebola through Voice – Combing Radio and a Voice-Powered Mobile Information Subscription Service to Inform Tens of Millions of West African Household and Stop the Epidemic

Misinformation about Ebola, particularly in rural areas, is a major ...

Kevin Schuster 11:42, Oct 19, 2014 9

Free telemedicine platform for West Africa

The Doctor Grants... involved innovating can be used to work...

EVDpot - Mobile Database System that links Patients, Contacts, Human Resources, Logistics, and GIS

Jacques Durand 19:06, Oct 07, 2014 9

William Parra 05:02, Oct 08, 2014 3

Mobilize African Art community to help communicate properly to locals dealing with ebola crisis - evaporate unnecessary...

Rebecca Bechtel 03:42, Oct 19, 2014 6

Helping Keep Healthcare Workers Safe: Strengthening Training

We are working with the IRCC/OFDA Alliance that created training materials...

Travis Good 20:43, Oct 15, 2014 5

Hand-to-Face Proximity Alarm

One risk that healthcare workers face from Ebola is self-contamination through...

Train and employ Ebola survivors as health workers! They are immune to Ebola so no need for full PPE, and stigmatized in home communities so would probably love to re-make their image as helpers and heroes.

Approximately 20-30% of people who receive supportive care survive Ebola...

Anna Bernstein 16:33, Oct 08, 2014 9

Wear and Share Available Phase Change Cooling Garments under PPE - Refreezeable in Ice Water or Refrigerator

Already in use by Firefighters, Military Surgeons, Ill Military these cooling vests...

Jah Thorn 07:35, Oct 20, 2014 12

Engaging Communities Building Confidence and Defeating Ebola through Civic Education

The "Knowmore Life" project aims to engage in Civic Education on the...

Brooks Marmon 06:40, Oct 10, 2014 3

James Moynagh 03:47, Oct 17, 2014 1

Low Cost Color Coded Balloons helps show status, location, and number of at home Ebola patients . These floating Indicators could be collectively seen from a helicopter and also could help elevate community awareness about infection and quarantine.

Cheap color coded balloons could provide a cost effective way to...

Craig Provost 11:29, Oct 20, 2014 11

Use a UV visible-only compound to assess whether healthcare workers are inadvertently contaminating themselves when taking off protective gear.

The idea is to use a UV visible only, water soluble compound, such as...

David K. 12:08, Oct 11, 2014 13

Protect the natural caregivers

We need to protect the natural caregivers - family members of Ebola...

Rebecca Menon 21:18, Oct 12, 2014 1

Offer cash honorariums for survivors who give their blood or plasma to Ebola patients.

Offer cash honorariums for survivors who give their blood or plas...

Harry Kreisler 20:15, Oct 15, 2014 1

Silk Cocoon

Health personnel, entering the suit, through the door maybe bi, transpare...

Raul Villaseca 14:55, Oct 16, 2014 16

Boost health worker recruitment

It's critical to have more frontline health providers to help the individual...

Sheldon Allen 06:40, Oct 10, 2014 38

Low cost duct tape removal tab solution for internal set of gloves(Video Attached)

Low cost idea for duct tape glove tabs to possibly reduce contamination,...

Craig Provost 11:04, Oct 18, 2014 6

Mobile Backpack Cooling System With Integrated Hydration System / Hooded Reuseble Vest To be Worn Under PPE

Backpack Mobile Cooling System is designed to be worn under PPE to provi...

Jay Buckalew 11:44, Oct 23, 2014 24

Wall or floor mounted hook and ring system for removal of PPE

Credit to Anna Bernstein who suggested one piece PPE suits with ho...

Anthony Davis 12:07, Oct 28, 2014 6

Train and employ Ebola survivors as health workers! They are immune to Ebola so no need for full PPE, and stigmatized in home communities so would probably love to re-make their image as helpers and heroes.

Approximately 20-30% of people who receive supportive care survive Ebola...

Anna Bernstein 16:33, Oct 08, 2014 9

Gender Based Violence occurs even after survival from Ebola

Women do not have control over their bodies including sperm and breast milk....

Lynn Lawry 06:06, Oct 16, 2014 7

Retrofit Packaged Goods with Prevention Kits

Packaged goods that can be easily found in local marketplaces can be retrofitted C...

Shane Zhao 16:47, Oct 26, 2014 4

Active or Passive Cooling Built into PPE Clothing or Worn Underneath

The relief of stress and discomfort of wearing PPE in hot and humid...

Bockes . 23:38, Oct 07, 2014 18

Shipping containers repurposed as isolation wards

Construction or renovation of a building is a process which can be cost-...

Kate Cho 19:07, Oct 15, 2014 3

Portable Emergency Glove Disinfectant Bath> Potentially reduce anxiety of infection for health workers who are working outside clinical/camp setting

Update 11/6/14 We have been working on the design of the glove bath...

Craig Provost 09:25, Oct 22, 2014 5

Calling Ebola survivors for help.

Ebola survivors are... Having Ebola survivors share experiences can help the virus strain this...

Stephen Gillie 06:38, Nov 05, 2014

Introducing...the "AEROTARD" COMFORT-VENTILATED SAFETY BODYSUIT.

Since so much research, expensive, extensive material...

Denise Denise 15:48, Oct 21, 2014 28

Patient Ebola Kits - Train locals in the community to become low-skilled healthcare workers! Patient Ebola Kits include instructions and supplies to reduce patient mortality.

Did you know... Ebola is not a death sentence? Many patients are not...

Rupa Raj 19:33, Nov 06, 2014

90% of everything is crap.

- Theodore Sturgeon

Where are my inspirations?

People are easily influenced by ideas they encounter

- **Fixation effects** [Jansson et al. 1991, Smith et al. 1993, Marsh et al. 1996, Kohn et al. 2011]

- **Creative in, creative out** [Marsh et al. 1996]

- **Diverse in, diverse out** [Nijstad et al. 2002]

Our research question

From a large pool of ideas,
how do we identify a set of ideas that are both ***creative*** and ***diverse***?

novel + appropriate

ideas are substantially different from each other

- Numerical scales [Tanaka et al. 2011, Yu et al. 2011]
- Thumbs-up / Thumbs-down [Xu et al. 2012]
- Pairwise ranking [Salganik et al. 2012]

Our research question

From a large pool of ideas,
how do we identify a set of ideas that
are both *creative* and ***diverse***?

ideas are substantially
different from each other

{
Crowd-created taxonomy
[Chilton et al. 2013]

Semantic labels/categories
[Andre´ et al. 2014, Chilton et al. 2014]

Batch processing
}

Our work

1. An efficient and scalable method, based on machine learning and crowdsourcing, that can identify diverse sets of ideas from a large pool

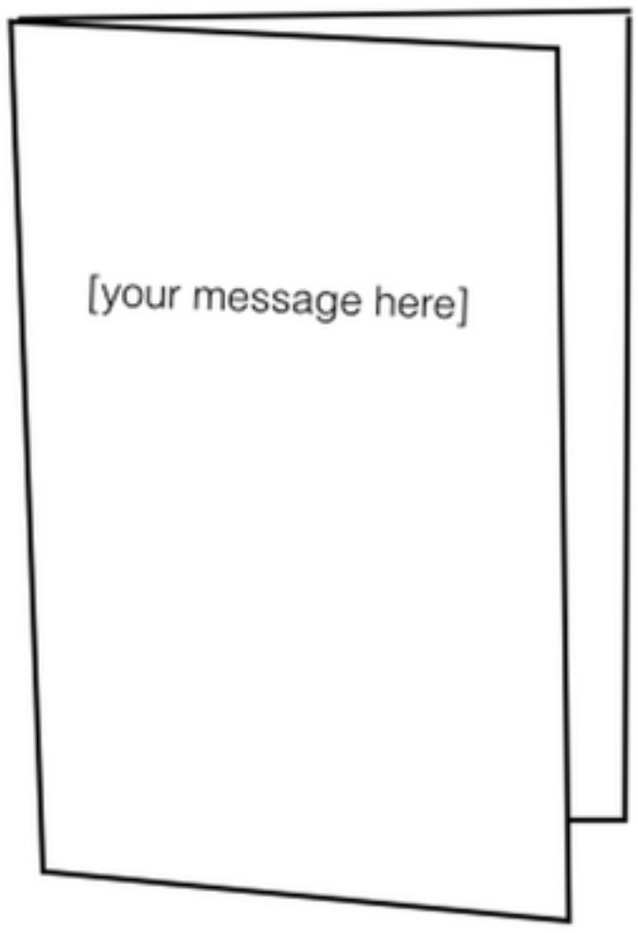
   dynamic idea processing instead of batch processing

   linear human effort

2. Empirical evaluation of the method demonstrating its effectiveness in inspiring diverse ideas

Challenge:

Come up with birthday messages for Mary, a firefighter who is about to turn 50.



Imagine the following scenario:

A greeting card company asks you to come up with personalized birthday messages for Mary, a firefighter who is turning 50. The chosen message will appear on a card like the one on the left. It might be accompanied by images chosen by the company.

An ideal birthday message conveys well wishes to the receiver. It can be funny or serious, specific or generic.

Half a century old today

Happy half century, Mary!

We were worried you wouldn't be home on time, so we set your kitchen on fire.

You're running out of time, better light a fire under that ass!

After 50 years your light is still burning strong

You're about two candles away from a fire hazard!

Happy Birthday!

Happy Birthday!

You're a bright candle in a dark world.

Time to Celebrate!

happy birthday you old flame

Thank you for being there for us.

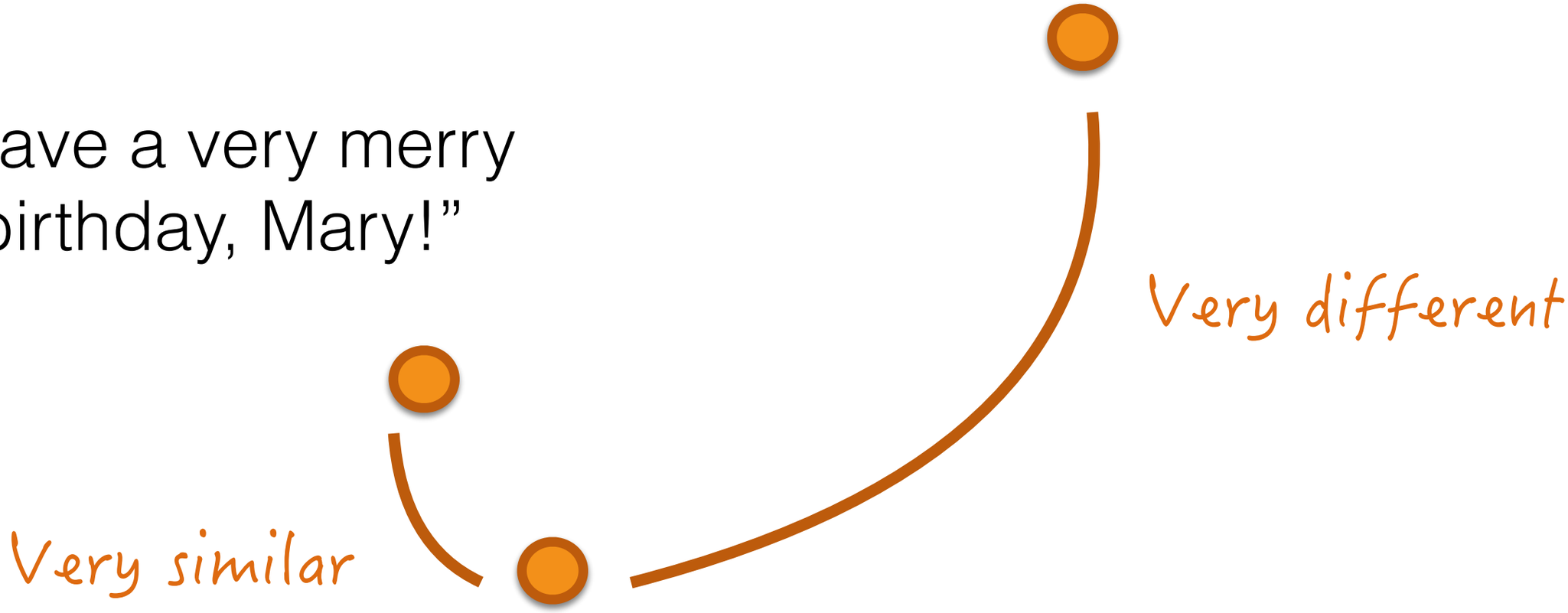
You have been one of a kind. Happy Birthday!

1. Our method:

Generate an idea map

“Have a very merry birthday, Mary!”

You are about 2 candles away from a fire hazard.



“Happy birthday!”

Evaluating all pairs requires $O(n^2)$ human judgements.

Approximate relationship between ideas

a is more similar to b than to c

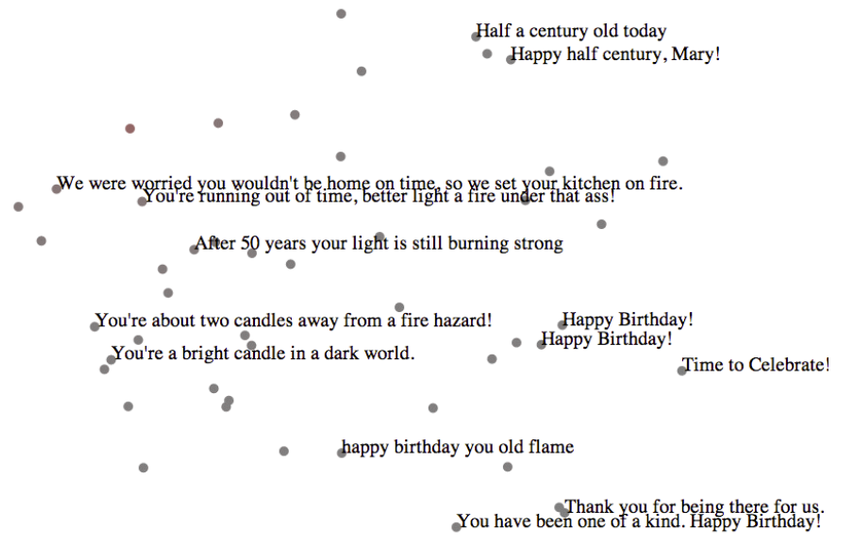
(a_1, b_1, c_1)

(a_2, b_2, c_2)

.
.
.

(a_n, b_n, c_n)

t-STE



Adaptively selecting queries that give the most information

a is more similar to b than to c

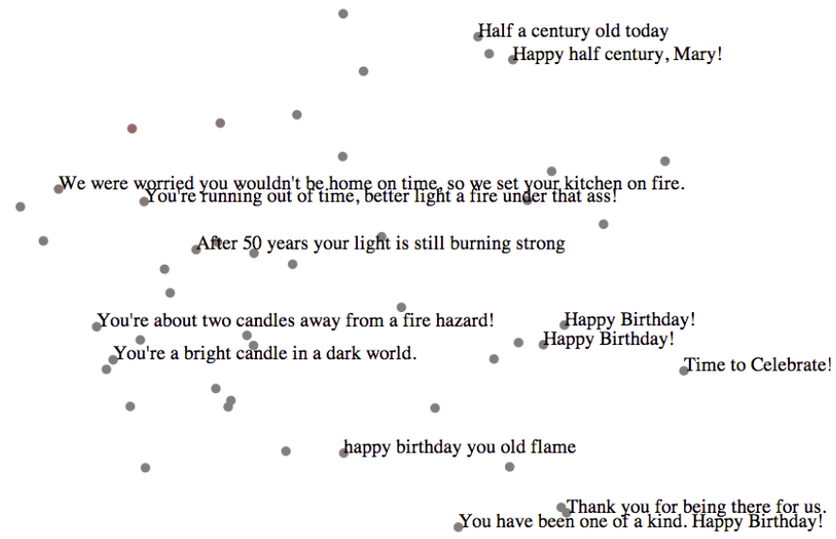
(a_1, b_1, c_1)

(a_2, b_2, c_2)

.
.
.

(a_n, b_n, c_n)

t-STE



Adaptive crowd kernel learning

Next best question: ask whether (a, b, c)?

Half century

Half a century old today

Happy half century, Mary!

We were worried you wouldn't be home on time, so we set your kitchen on fire.

You're running out of time, better light a fire under that ass!

After 50 years your light is still burning strong

Generic

Happy Birthday!

Happy Birthday!

Time to Celebrate!

Candles

You're about two candles away from a fire hazard!

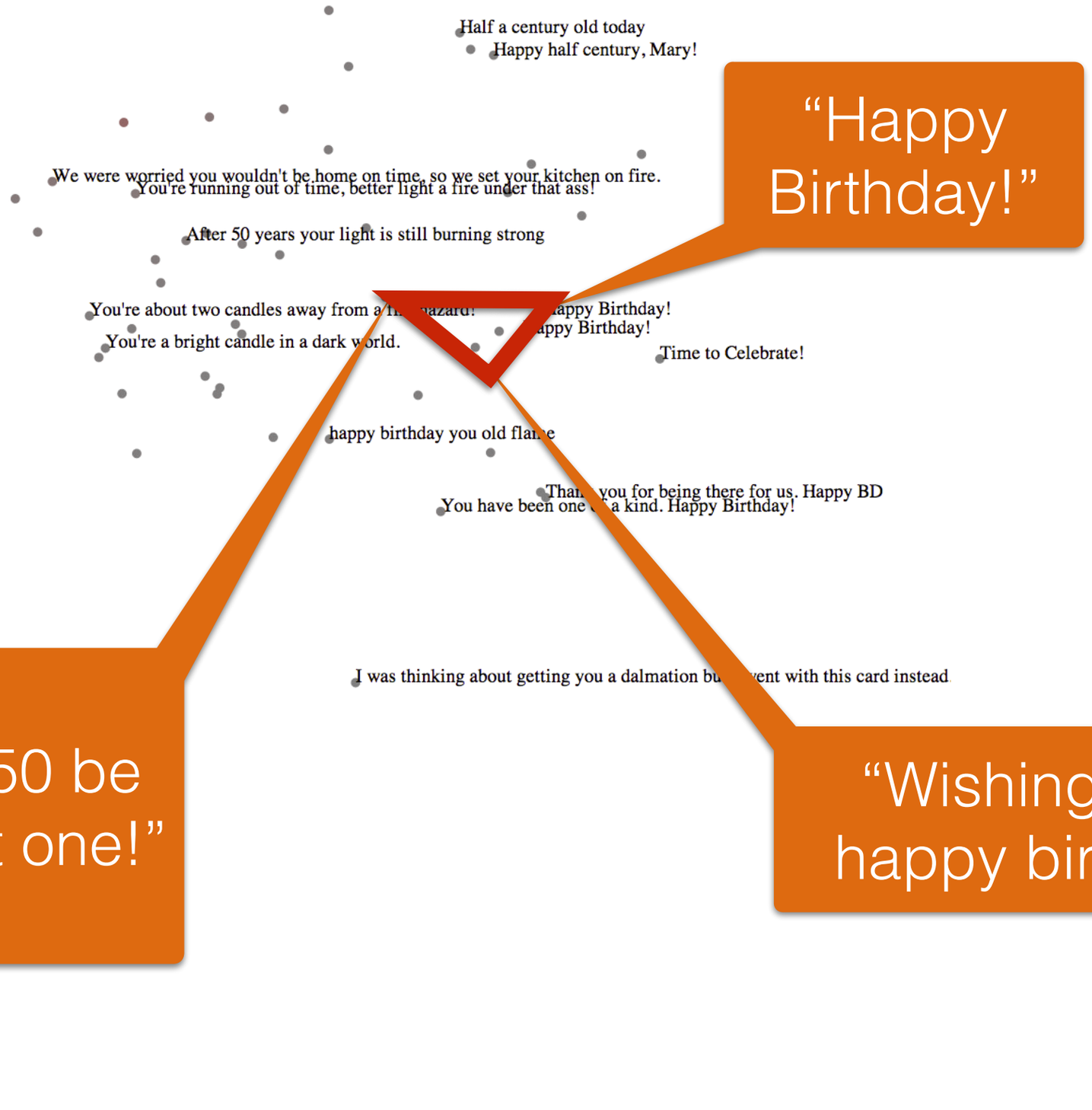
You're a bright candle in a dark world.

happy birthday you old flame

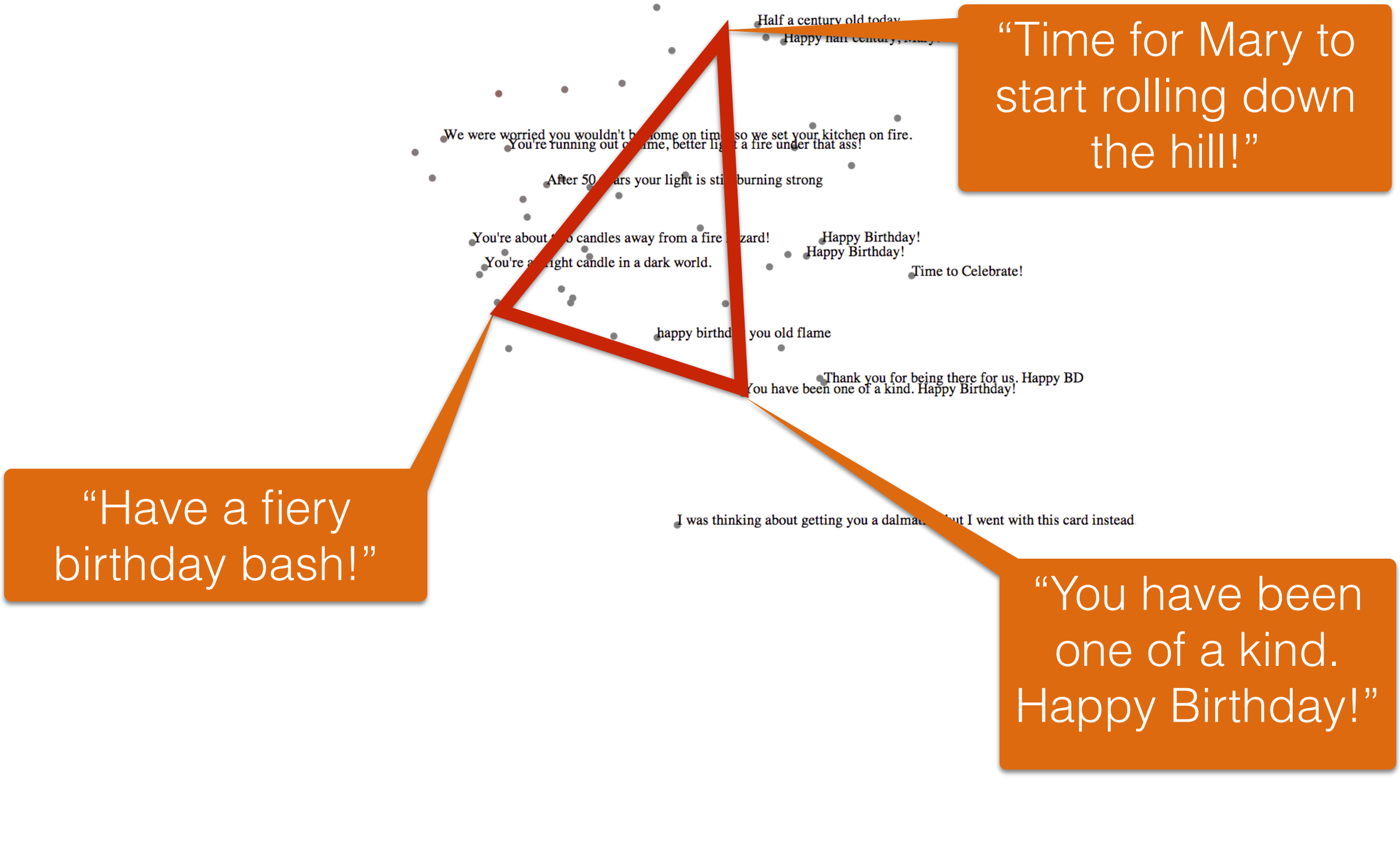
Thank you for being there for us.

You have been one of a kind. Happy Birthday!

Example of a set with low diversity



Example of a set with high diversity



2. Empirical evaluation:

Do diverse set of examples sampled by our method actually inspire diverse ideas?

Main hypothesis

Automatically selected diverse examples → Diverse set of ideas

Experiment: procedure

Challenge:

Come up with birthday messages for Mary, a firefighter who is about to turn 50.

Imagine the following scenario:

A greeting card company asks you to come up with personalized birthday messages for Mary, a firefighter who is turning 50. The chosen message will appear on a card like the one on the left. It might be accompanied by images chosen by the company.

An ideal birthday message conveys well wishes to the receiver. It can be funny or serious, specific or generic.

Task:

In 4 minutes, try to come up with **as many birthday wishes as you can**. We will provide you with a timer to tell you how much time you have left.

Once you click "Start writing messages", you can type your ideas in the text box that appears below. To submit a message, click "Add a new message".

Task prompt

Hints:

To help you start, here are some ideas generated by other participants.

- I was thinking about getting you a dalmation but I went with this card instead. Happy Birthday
- Mary you could rescue me any day!
- Fifty years later, There's (still) Something About Mary.

Don't worry about making your ideas perfect. You can always throw bad ideas away.

Examples

03:45 min

Type a message here. Click "Add a new message" to add another.

Add a new message

Workspace

Your messages:

1. HBD!

Participant's ideas

Experiment: procedure

Challenge:

Come up with birthday messages for Mary, a firefighter who is about to turn 50.

Imagine the following scenario:

A greeting card company asks you to come up with personalized birthday messages for Mary, a firefighter who is turning 50. The chosen message will appear on a card like the one on the left. It might be accompanied by images chosen by the company.

An ideal birthday message conveys well wishes to the receiver. It can be funny or serious, specific or generic.

Task:

In 4 minutes, try to come up with **as many birthday wishes as you can**. We will provide you with a timer to tell you how much time you have left.

Once you click "Start writing messages", you can type your ideas in the text box that appears below. To submit a message, click "Add a new message".

Hints:

"The way to get good ideas is to get lots of ideas."
--Linus Pauling

Don't worry about making your ideas perfect. You can always throw bad ideas away.

03:45 min

Type a message here. Click "Add a new message" to add another.

Add a new message

Your messages:

1. HBD!

Experiment: design

2 X 2 between-subject design with a baseline

Diversity of examples (our method):

- Low diversity
- High diversity

Creativity of examples

Experiment: design

2 X 2 between-subject design with a baseline

Diversity of examples (our method):

- Low diversity
- High diversity

Creativity of examples

Baseline: No examples

Experiment: measure

Diversity of generated ideas:

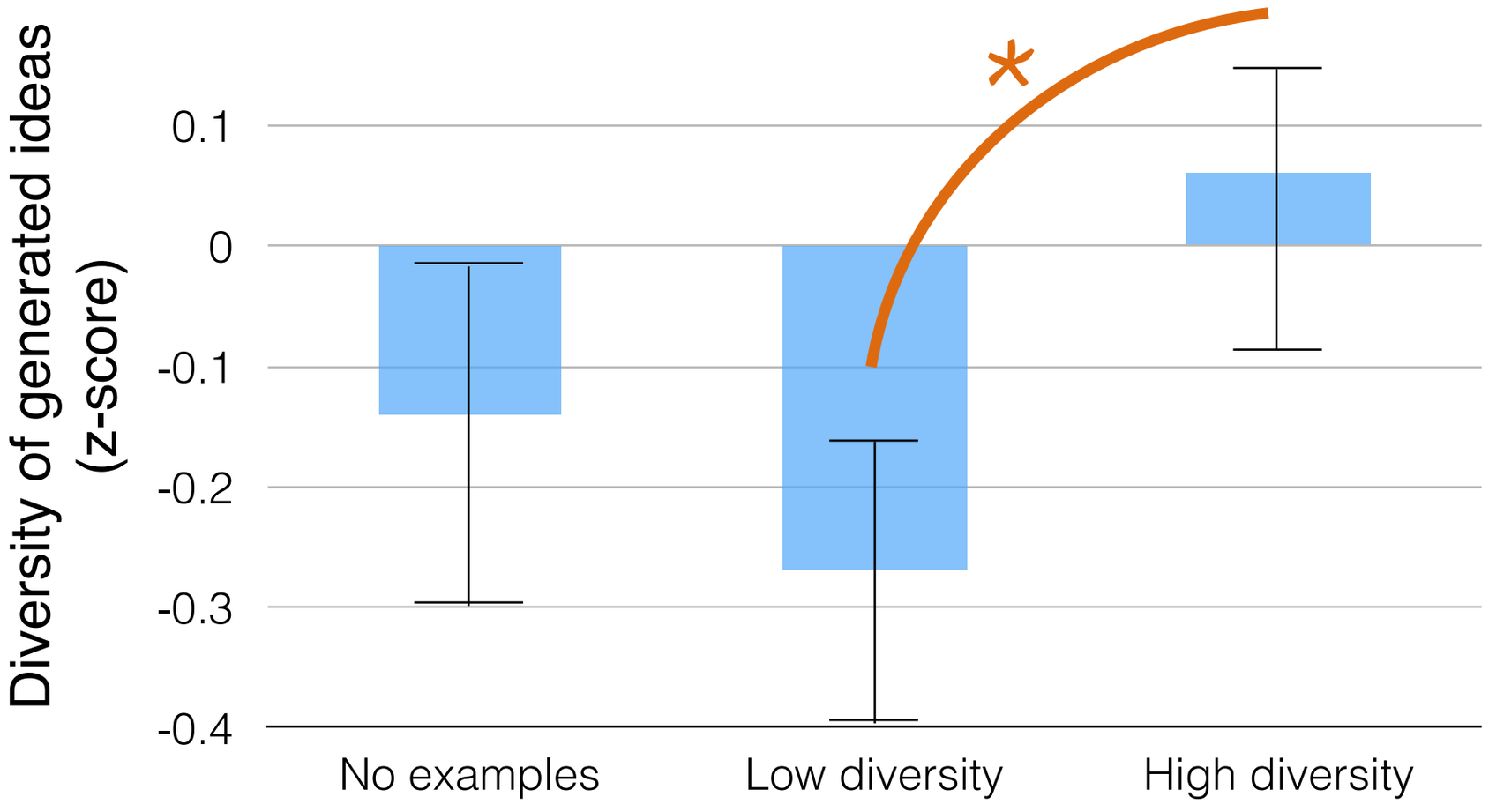
- Assessed by Amazon MTurk workers
- Rate similarity of pair of ideas on a scale of 1 (not at all similar) to 7 (very similar)

Experiment: Participants

127 participants recruited from Amazon MTurk generated 723 ideas.

Result

People generate more diverse ideas from a diverse set of examples.



$F(1,56)=2.26,\ p = 0.028$

Results

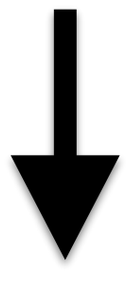
Automatically selected diverse examples

Diverse set of ideas

How did participants use the given examples?

Add a new spin on an example

“How many firefighters does it take to put out fifty candles?”



“Get ready to call the fire department, we are about to light the 50 candles!!”

Combine ideas from more than one examples

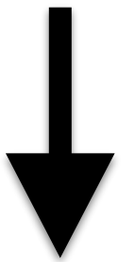
“We were worried you wouldn’t be home on time, so we set your kitchen on fire.”

“Remember, blow out the candles on your cake, don’t use the hydrant!”

“Mary! That’s a lot of candles! If the place catches on fire, at least we won’t have to call anyone!”

Surface borrowing

“Mary you could rescue me any day!”



“mary you could put out fires for me any day”

Q: Did people just imitate the examples given to them?

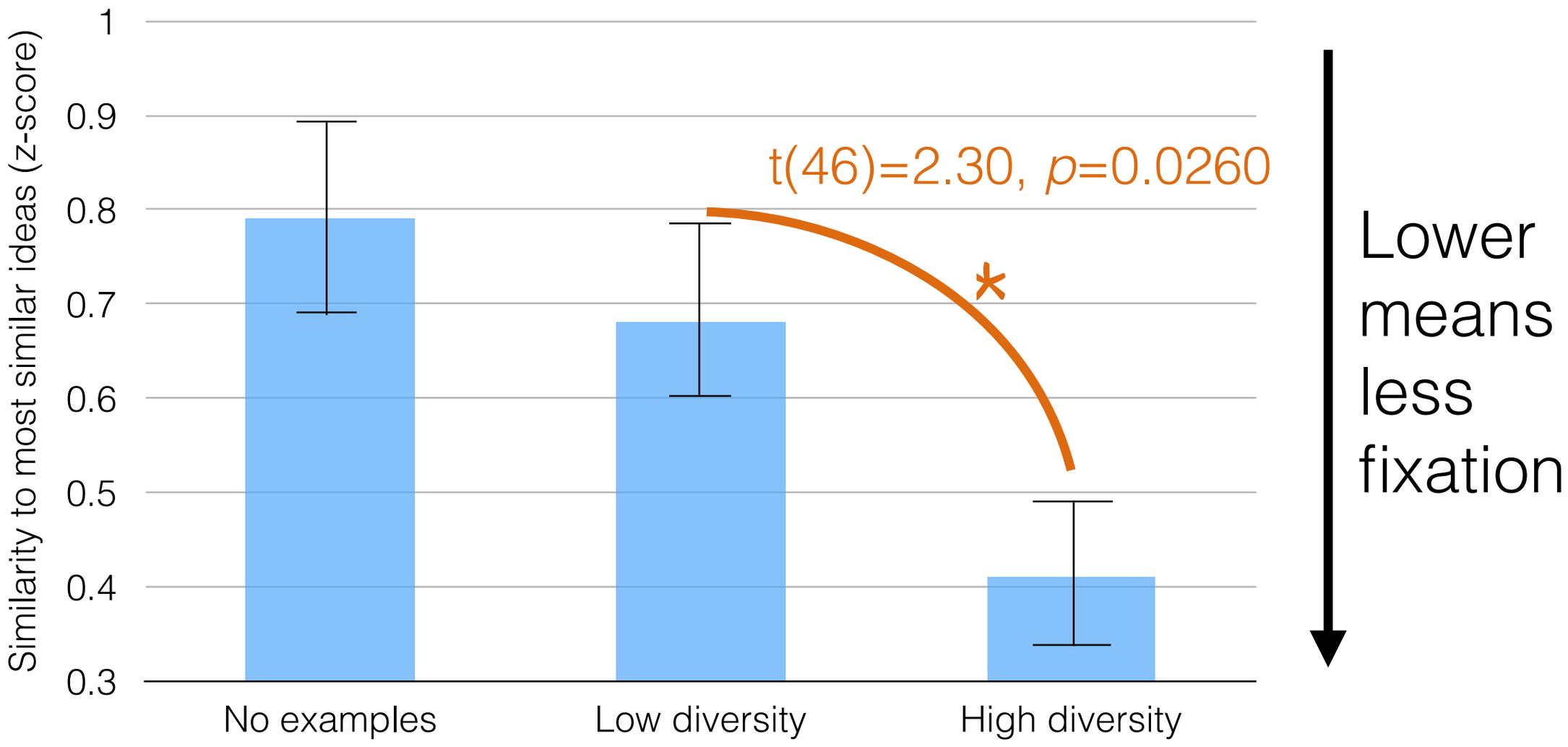
How fixated participants were to given examples?

For each generated idea, look at the example that is most similar.

In the baseline condition, measure self-fixation.

For each new ideas, look at the prior ideas that is most similar

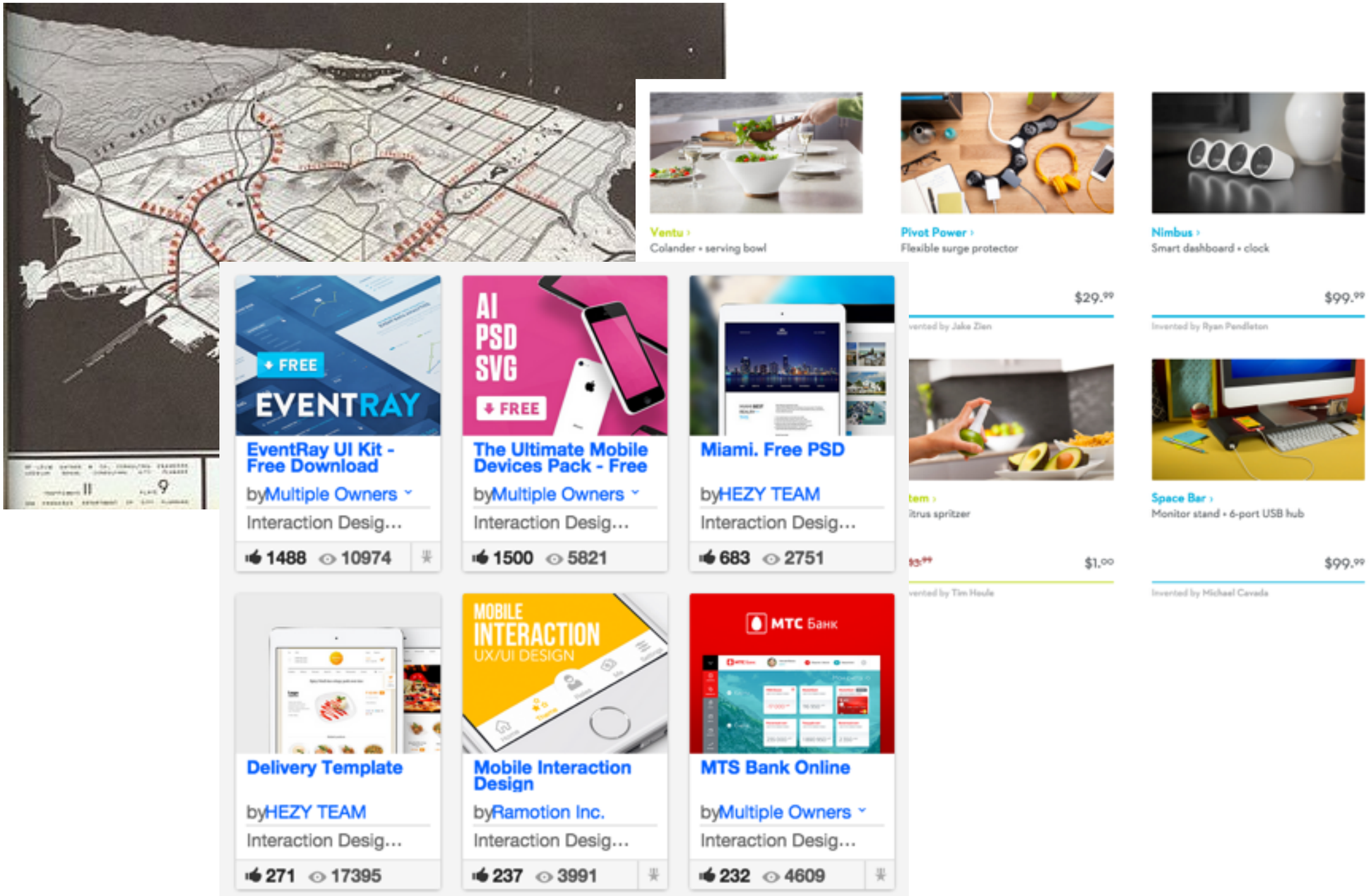
Participants who saw examples with high diversity fixated less.



Q: Did people just imitate the examples given to them?

A: No

Toward future collective idea generation systems



Contributions

We developed a scalable approach that identifies diverse sets of ideas from a large pool.

We showed that this scalable approach can be used to nudge people to generate more diverse ideas.

Pao Siangliulue
Harvard SEAS

paopow@seas.harvard.edu

paotodo.com

Kenneth C. Arnold (Harvard SEAS)

Krzysztof Z. Gajos (Harvard SEAS)

Steven P. Dow (CMU)