

High Performance Online Learning

using teams technology

March 2019

Agenda

- The problem we set out to solve
- How we use the Riff Platform to solve it
- NEXT Canada partnership to deliver “distance innovation”
- Appsembler partnership to build a custom LTI integration
- Ongoing research and customer engagements



Typical Learning Experience



Long lectures
Passive listening
Teacher-to-student
“High-stakes” assessment

Long videos or readings
Passive consumption
Screen-to-learner
****Formative and summative assessments**

Typical Video/Audio Conference Call

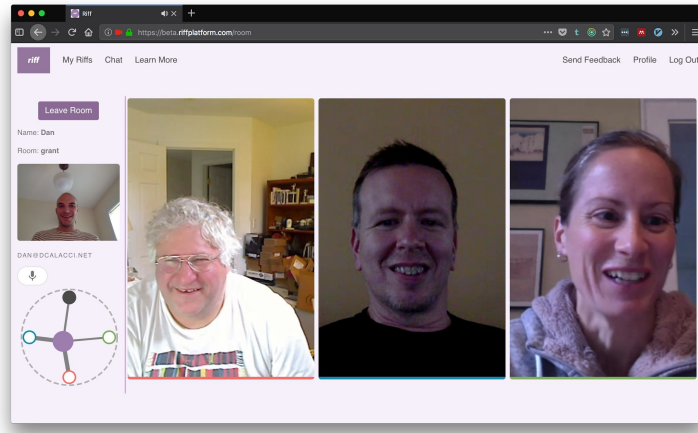


Long videos or readings
Passive consumption
Screen-to-learner
Formative and summative assessments

Long monologues
Passive listening
Convener/manager-to-attendees
****No meaningful assessment**

The Riff Platform

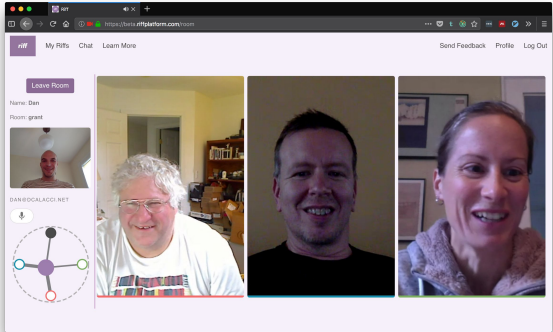
The Riff Platform is a browser-based application that **measures, analyzes, and provides insights about video and text chat interactions** in online encounters, such as meetings or collaboration sessions. It is being used in online courses, leadership development, and distance innovation projects.



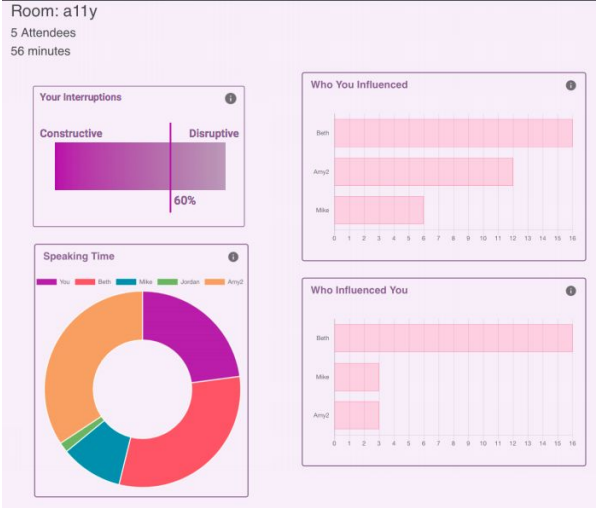
Research shows the Riff Platform:

- increases engagement
- increases information sharing and collaboration
- results in more effective decision making and better team cohesion

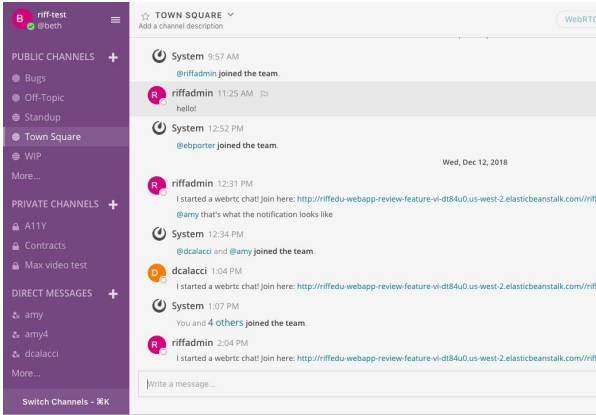
The Riff Platform



Riff Video 

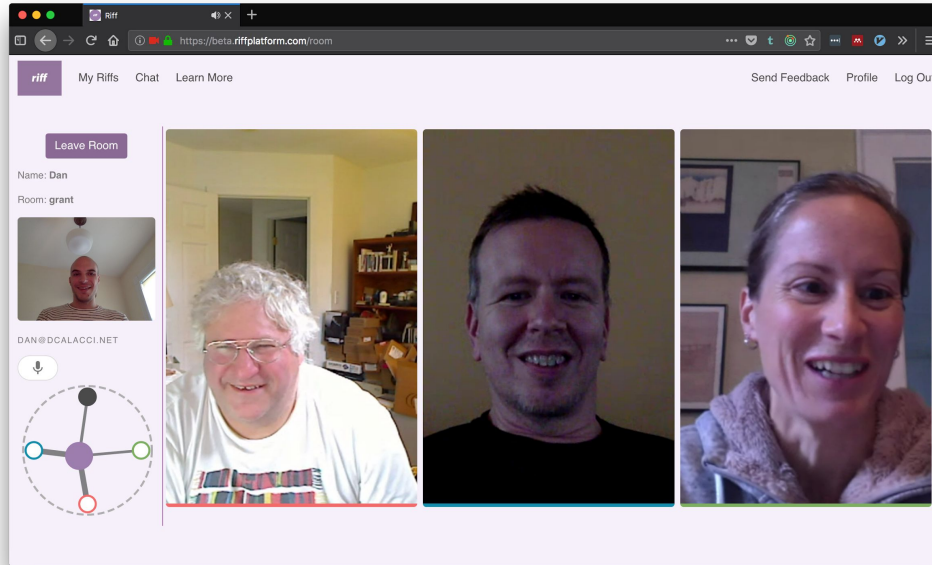


Riff Dashboard 



Riff EDU 

Riff Video



The Riff Platform measures the **vocal and facial-gestural data*** of people in video conferences

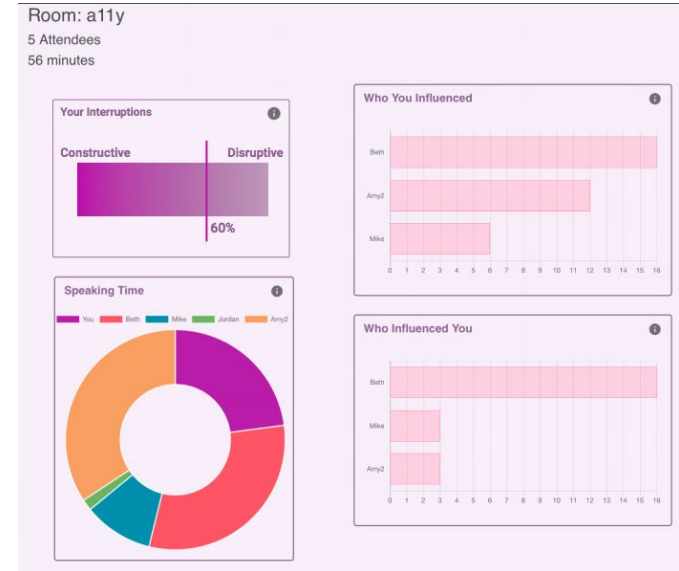
*We don't collect **what** you're saying, just **how** you're saying it...

Riff Dashboard

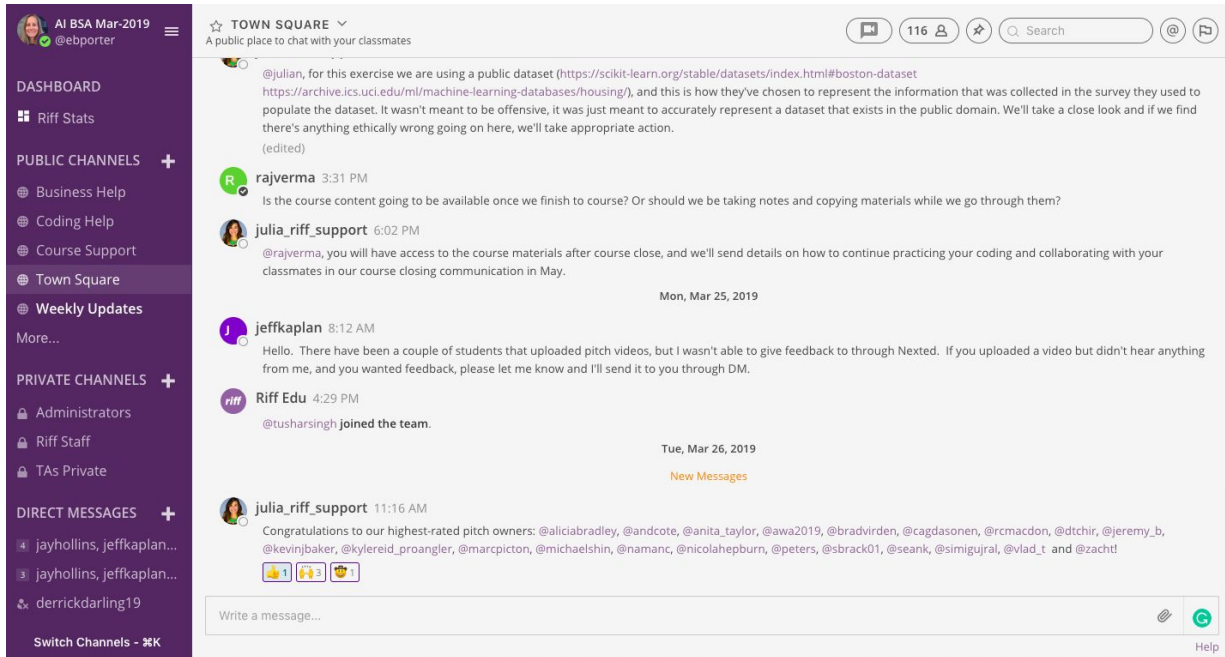
Using machine learning, Riff generates **insights about interactions between participants**, modeling patterns of individual and team behavior such as:

- Engagement
- Collaboration
- Respectfulness
- Bias

These indicate for performance and satisfaction!



Riff EDU



AI BSA Mar-2019
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DASHBOARD

- Riff Stats

PUBLIC CHANNELS +

- Business Help
- Coding Help
- Course Support
- Town Square**
- Weekly Updates
- More...

PRIVATE CHANNELS +

- Administrators
- Riff Staff
- TAs Private

DIRECT MESSAGES +

- jayhollins, jeffkaplan...
- jayhollins, jeffkaplan...
- derrickdarling19

Switch Channels - 5K

TOWN SQUARE
A public place to chat with your classmates

116 | Search | @ | 📄

julia_riff_support 6:02 PM
@rajverma, you will have access to the course materials after course close, and we'll send details on how to continue practicing your coding and collaborating with your classmates in our course closing communication in May.

Mon, Mar 25, 2019

jeffkaplan 8:12 AM
Hello. There have been a couple of students that uploaded pitch videos, but I wasn't able to give feedback to through Nexted. If you uploaded a video but didn't hear anything from me, and you wanted feedback, please let me know and I'll send it to you through DM.

riff **Riff Edu** 4:29 PM
@tusharsingh **joined the team.**

Tue, Mar 26, 2019

New Messages

julia_riff_support 11:16 AM
Congratulations to our highest-rated pitch owners: @aliciabradley, @andcote, @anita_taylor, @awa2019, @bradvirden, @cagdasonen, @rcmacdon, @dtchir, @jeremy_b, @kevinjbaker, @kylereid_proangler, @marcpicton, @michaelshein, @namanc, @nicolahepburn, @peters, @sbrack01, @seank, @simigujral, @vlad_t_and @zacht!

Write a message... | 📎 | 🗨️ | Help

Riff EDU, an
LMS-integrated
collaboration site
for people learning
and working
together online

Riff EDU is integrated with Riff Video!

The image shows two overlapping screenshots from the Riff platform. The background screenshot is a chat window for 'TOWN SQUARE' with a message from 'julia_riff_support' about a public dataset. The foreground screenshot is a Riff Video room interface showing a video call with three participants: Dan, an older man with glasses, and a woman. A purple callout bubble highlights the chat icon in the top right of the video room, which is linked to the chat window in the background. The chat window shows a message from 'julia_riff_support' at 6:02 PM: '@rajverma, you will have access to the course materials after course close, and we'll send details on how to contact classmates in our course closing communication in May.' Below this, a message from 'jeffkaplan' at 8:12 AM says 'Hello. There have been a couple of students that uploaded pitch videos, but I wasn't able to give feedback to them from me, and you wanted feedback, please let me know and I'll send it to you through DM.' Another message from 'Riff Edu' at 4:29 PM says '@tusharsingh joined the team.' A 'New Messages' notification is also visible. The video room interface includes a 'Leave Room' button, a name 'Dan', a room name 'grant', and a video feed with three participants. A navigation bar at the bottom of the video room includes 'My Riffs', 'Chat', and 'Learn More'.

Partners in Online Learning

Extending early partnership with MIT Sloan to offer professional development courses online.



Working with incubator, NEXT Canada to develop a program of study in Artificial Intelligence for business decision makers and technical professionals to learn how to apply AI principles to market verticals.



Moving into professional services to support leadership development program within top 5 global consulting firm.



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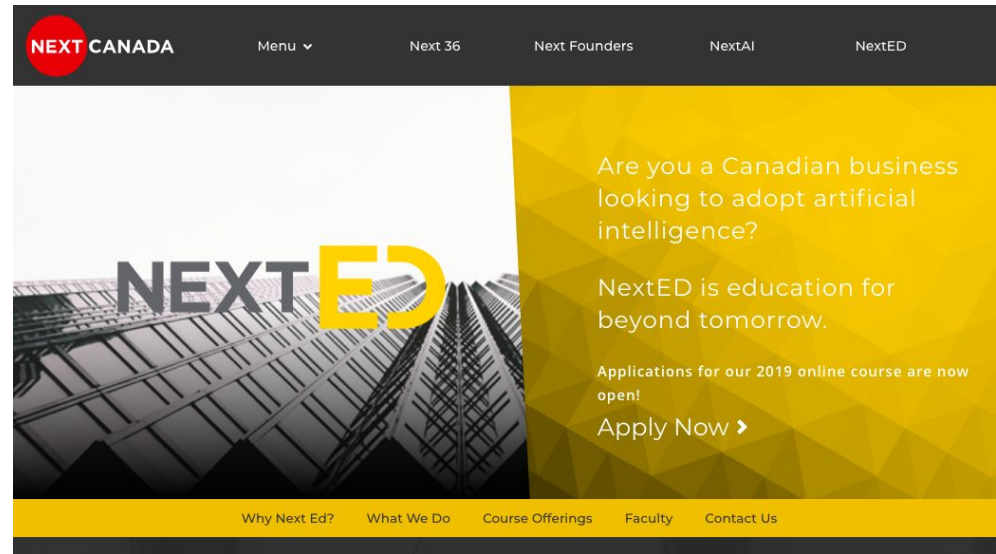


Moving into professional services to support leadership development program within top 5 global consulting firm.



“Distance Innovation” for AI Adoption

- Wrote an AI course to solve the specific problem of driving **AI adoption in Canadian businesses**
- NEXT Canada course combines online learning and entrepreneurship activities — “distance innovation”
- The course itself is filled with lots of goodies...





Course Build in Tahoe (from Appsembler)



The screenshot shows the 'NEXT CANADA' course interface. At the top, there is a navigation bar with 'DASHBOARD', 'FIND COURSES', and 'Welcome'. Below this is a dark red banner with 'View this course as: Student'. A secondary navigation bar includes 'Home', 'Course' (highlighted), 'Help', 'FAQs', 'Syllabus', 'AI Glossary', 'Collaboration', 'Capstone', and 'Progress'. The main content area is titled 'Week 4 - Classifying Data Using Decision Trees > Classification and Regression > Classification and Regression'. It features a 'Previous' button, a 'Next' button, and a 'Bookmark this page' link. The current page is 'Classification and Regression', which includes a video player for 'Features and Classes'. The video description states: 'In this video, Hossein introduces the terms **features** and **classes**. To demonstrate these concepts, he returns to the example of analyzing how the time students studied and slept affected their class performance. Hossein then discusses the differences between **regression** and **classification**.' A sidebar on the left contains 'Bookmarks', a search bar, and a list of course sections: 'Orientation', 'Week 1 - Becoming an AI Champion', 'Week 2 - Telling a Story with Data', and 'Week 3 - Modeling Data Using Machine Learning'.




Expert Instructor and AI Entrepreneur Videos (with Diginovations)

Decision Trees
Bookmark this page

Learning from Past Data

In this video, Sandy introduces the concept of decision trees with the example of fraud as a use case. He also discusses random forests, which are a complex collection of multiple decision trees.



So let's talk about a slightly more complicated version of machine learning AI called decision trees, and sort of state-of-the-art version of that which is called random forests. So an example of when a decision tree is important might be fraud. Here's an order that comes in. Is this a valid order, or is this someone that's pulling a scam on you? So the way you look at that is you go back in the past, and you say, okay, for things that turned out fraudulent, what were the size of the order? What were the places the order came from? Were there other characteristics about the order that that made someone fraudulent, not

0:24 / 3:22 | Speed 1.0x | HD | [Settings] | [Volume]

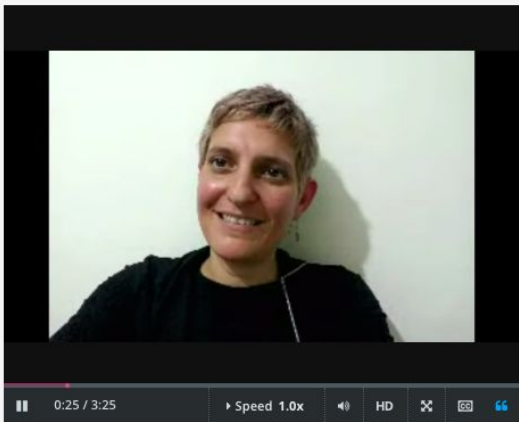
Sandy Pentland (Media Lab) & Inmar Givoni (Uber)

Inmar Givoni on Machine Learning at Uber
Bookmark this page

Inmar Givoni

Inmar Givoni is a senior engineering manager at Uber. Her expertise is in the successful application of machine learning techniques to real-world problems that require efficient and practical solutions, such as self-driving vehicles, robotics, e-reading, hardware, computational biology, computer vision for video gaming, and e-commerce.

In this video, she discusses her research on self-driving vehicles at Uber.



that are working on developing cutting edge technologies for self-driving, but it is still research in the sense that it is isolated from a real production system. So I oversee a team of engineers and we take these prototype algorithms and we basically push them into the production systems. In a small company, the same software engineer is also the machine learning researcher and the person doing the calibration, whereas here we have entire teams dedicated to each one of these areas. Even though you have more resources at your disposal and more people that are helping, it is still hard to get machine learning into production at scale. For me, the way companies can

0:25 / 3:25 | Speed 1.0x | HD | [Settings] | [Volume]



Coding Exercises in Jupyter Notebooks

(sandbox environment available with Tahoe)

The screenshot shows a Jupyter Notebook interface. At the top, the title bar reads "jupyter Assignment2 Last Checkpoint: 03/17/2019 (unsaved changes)". The menu bar includes File, Edit, View, Insert, Cell, Kernel, Widgets, and Help. On the right, there are buttons for "Connecting to kernel", "Trusted", and "Python 3". Below the menu bar is a toolbar with icons for file operations, running, and markdown. The main content area has a blue border and contains the following text:

Telling a Story with Data

Businesses need to make decisions now about spending money for the future, yet the uncertainty of the future makes this difficult. In this coding exercise, we'll use linear and logistic regression to make predictions and tell two stories with data.

This exercise has two parts.

1. Use linear regression to determine whether a food truck owner should expand to a new city.
2. Use logistic regression to determine whether students are likely to pass a course based on their past test score and predicted score for an upcoming test.

Preliminary Step: Create Infrastructure

Run the following cell to load all the libraries and custom built functions that we'll need for this exercise. After running the cell, you will see text below indicating that needed libraries are installed.

```
In [ ]: import sys
        !{sys.executable} -m pip install -q scikit-plot
        import scikitplot as skp

        from scikitplot.metrics import plot_roc
        from sklearn import linear_model
        from sklearn.metrics import r2_score
        import matplotlib.pyplot as plt
        import numpy as np
        import pandas as pd
        %matplotlib inline
```



Collaborative Exercises in Peer Learning Groups

(in the Riff Platform using LTI integration with Open edX cohorts)

PLG Exercise

Follow these steps, using the Riff Edu to meet with the other members of your team in a live session:

1. Open your PLG channel on Riff Edu. To do this, click **Open PLG** under **Riff Edu Peer Learning Group (External resource)**.
2. In your PLG channel, post your individual idea to your PLG.
3. In your PLG channel, when your PLG leader joins the channel to join a live session with your PLG.
4. Develop a brief timeline of potential next steps involved. You may want to use the **RAC**.
5. Have your PLG leader save the shared document to include **all PLG members' names and PLG channel as the file name**.
6. Have your PLG leader submit the document to the **PLG leaders: Click the following link, and save the document to the **Work Toward Shared Goals folder****.
7. After your PLG leader has submitted the document, complete the **PLG Meeting Experience Survey** below.

Reminder: PLG collaboration exercises are designed to provide feedback on collaboration exercises.

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DASHBOARD

- Riff Stats

PUBLIC CHANNELS +

- Business Help
- Coding Help
- Course Support
- Town Square
- Weekly Updates
- More...

PRIVATE CHANNELS +

- Administrators
- Riff Staff
- TAs Private

DIRECT MESSAGES +

- jayhollins, jeffkaplan...
- jayhollins, jeffkaplan...
- derrickdarling19

Switch Channels - 2xK

TOWN SQUARE

A public place to chat with your classmates

It would be your individual idea, whatever stage of development you are in.

julian 12:06 PM

Is this a trick question to see if we're paying attention re population of "blacks" in 2019?

julia_riff_support 1:38 PM

@julian, for this exercise we are using a public dataset (https://archive.ics.uci.edu/ml/machine-learning-databases/populate the dataset. It wasn't meant to be offensive, it there's anything ethically wrong going on here, we'll take (edited)

rajverma 3:31 PM

Is the course content going to be available once we finish?

julia_riff_support 6:02 PM

@rajverma, you will have access to the course materials classmates in our course closing communication in May

jeffkaplan 8:12 AM

Hello. There have been a couple of students that uploaded from me, and you wanted feedback, please let me know

Riff Edu 4:29 PM

@tusharsingh joined the team.

Write a message...

riff My Riffs Chat Learn More

Send Feedback Profile Log Out

Leave Room

Name: Dan

Room: grant

DAN@DCALACCI.NET

Write a message...


Developing a Pitch for an AI Venture

(video submissions using peer graded assignments)

▶

Create a Pitch Using Public Narrative

In this video, David asks you to create and submit a two-minute pitch for your idea. Your pitch must include all three elements of **public narrative**: the stories of self, us, and now.



Okay, now that we understand the story of self, story of us, and story of now, we're

going to take that and apply it in our one hundred and twenty second elevator pitch

framework. Create a public narrative, story of self, story of us, and story of now in one hundred and twenty seconds.

End of transcript. Skip to the start

Deliver Your Pitch

This assignment has several steps. In the first step, you'll provide a response to the question. The other steps appear below the **Your Response** field.

1

Your Response

due Jan. 1, 2029 00:00 UTC (in 9 years, 9 months)

IN PROGRESS

Enter your response to the question. You can save your progress and return to complete your response at any time before the due date (Monday, Jan. 1, 2029 00:00 UTC). **After you submit your response, you cannot edit it.**

The prompt for this section

1. In the "Your response" field below, enter the name of the pitch video that you uploaded to the NEXT Canada Pitch Videos folder. For example, the video name may be PaulineJohnson.mp4.
2. Select "Submit your response and move to the next step".
3. Follow the onscreen prompts to review pitches from three of your peers.

After three of your peers and course staff have evaluated your pitch, your results will be available on this page.

Your response

Enter your response to the question above.

You may continue to work on your response until you submit it.

Save your progress

THIS RESPONSE HAS NOT BEEN SAVED.

Business Venture Planning in Capstone Teams

(in the Riff Platform using LTI integration with Open edX teams)

Exercise

To complete the exercise, follow these steps.

1. Download the [Competitive Analysis template](#). You will answer the questions directly in the document, then upload it below.
2. Hold one Riff video session to brainstorm an idea.
3. Hold one Riff video session to review draft work product.
4. Designate one team member to "own" editing the document.

Note: Ensure all team members' names are in the document.

5. For the member submitting the document, in the Position document.

Note: Course staff will ensure all team members' names are in the document.

After the team member submits the document, course staff will post the results. Note that your results will only be shown to you and your team. You should share the results with the team.

All team members should then answer the questions in the document.

If you have questions, see the following resources:

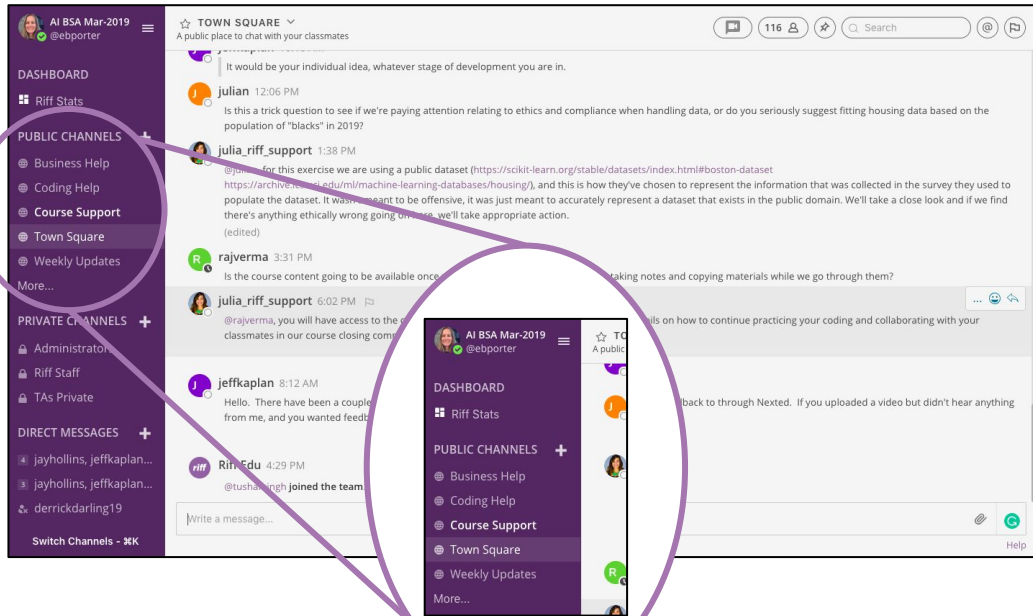
- Riff Channel for Support
- [Submit a file with a response](#)

A screenshot of the Riff platform's navigation menu. The menu is purple and lists various options: DASHBOARD (Riff Stats), PUBLIC CHANNELS (+) (Business Help, Coding Help, Course Support, Town Square, Weekly Updates, More...), PRIVATE CHANNELS (+) (Administrators, Riff Staff, TAs Private), and DIRECT MESSAGES (+) (jayhollins, jeffkaplan..., jayhollins, jeffkaplan..., derrickdaring19). At the bottom, it says 'Switch Channels - 11K'.

A screenshot of the Riff chat interface. The header shows 'TOWN SQUARE' and 'A public place to chat with your classmates'. There are 116 people in the chat. The chat history includes messages from 'julian' (12:06 PM) asking a question about a public dataset, 'julia_riff_support' (1:38 PM) providing context, 'rajverma' (3:31 PM) asking about course content, 'julia_riff_support' (6:02 PM) providing an answer, 'jeffkaplan' (8:12 AM) providing feedback, and 'Riff Edu' (4:29 PM) announcing a team join.

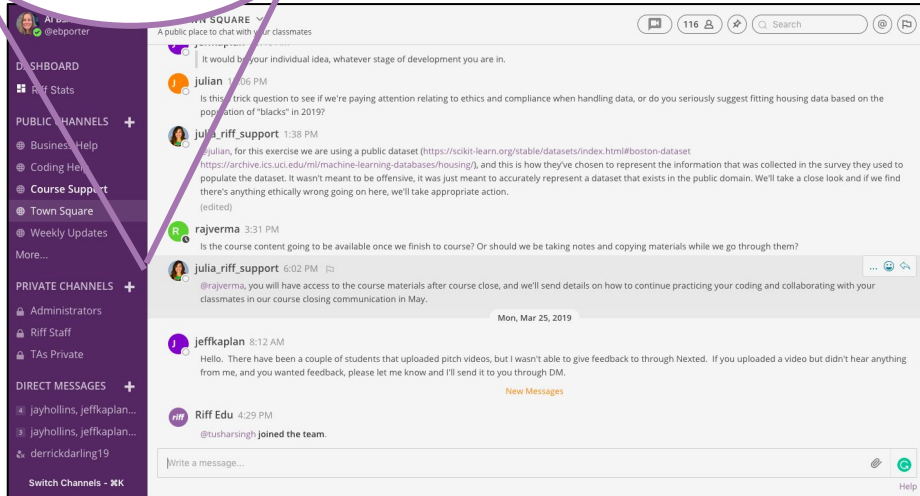
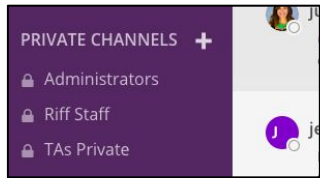
A screenshot of the Riff video session interface. The browser address bar shows 'https://beta.riffplatform.com/room'. The interface includes a 'Leave Room' button, a name 'Dan', a room name 'grant', and a profile picture for 'DAN@DCALACCI.NET'. Below these are three video thumbnails showing participants in a video call.

Supporting Learners — TAs and Mentors



- TAs support learners in 3 ways:
 - general support issues
 - Coding help
 - Business plan help
- Mentors support learners in their business plan development activities (recruited from local academic and business community)
- Other public channels support collaboration and information sharing in the course community

Custom Code to Extend Open edX LTI



- Developed by Appsembler's Omar Al-Ithawi with help from the edX team (Nimisha Asthagiri and Dave Ormsbee)
- Adds cohort and team mappings to LTI tool launch
- Cohorts mapped to Peer Learning Groups (i.e. private channels in Riff Edu) — *assigned*
- Teams mapped to Capstone Project Teams (i.e. different private channels in Riff Edu) — *self-selected*

Custom Code to Extend Open edX LTI

- The Open edX LTI Consumer XBlock is now extensible; it was not developed as a forked XBlock
- The XBlock now allows you to write “parameter processors” which let additional LTI parameters to be passed without having to change the XBlock itself
- Have contributed the changes upstream for anyone to use

- [Open source code](#)
- [Pull request](#)

Editing: Riff LTI Test

Request user's username False (Default)

Select True to request the user's username.

Request user's email False (Default)

Select True to request the user's email address.

Send extra parameters True

Select True to send the extra parameters, which might contain Personally Identifiable Information. The processors are site-wide, please consult the site administrator if you have any questions.

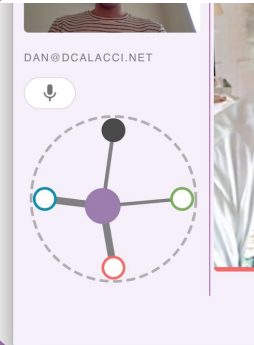
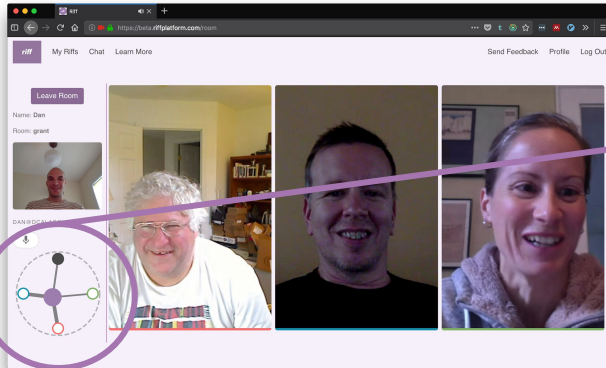
```
EDXAPP_XBLOCK_SETTINGS:
  lti_consumer:
    parameter_processors:
      - 'customer_package.lti_processors:team_and_cohort'
      - 'example_package.lti_processors:extra_lti_params'
```


NSF Supported Research in Peer Learning



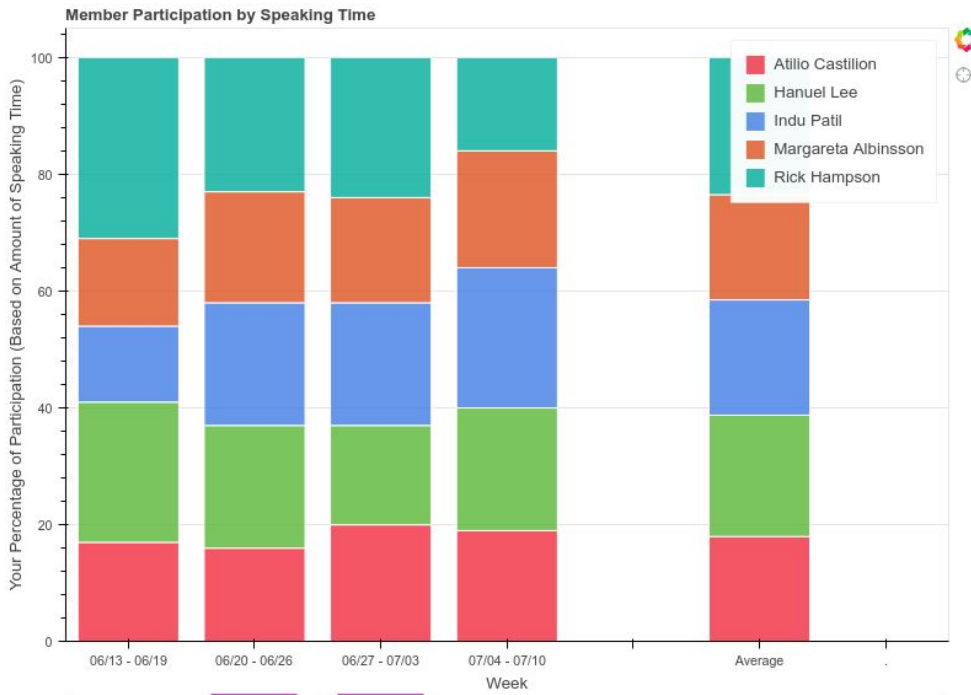
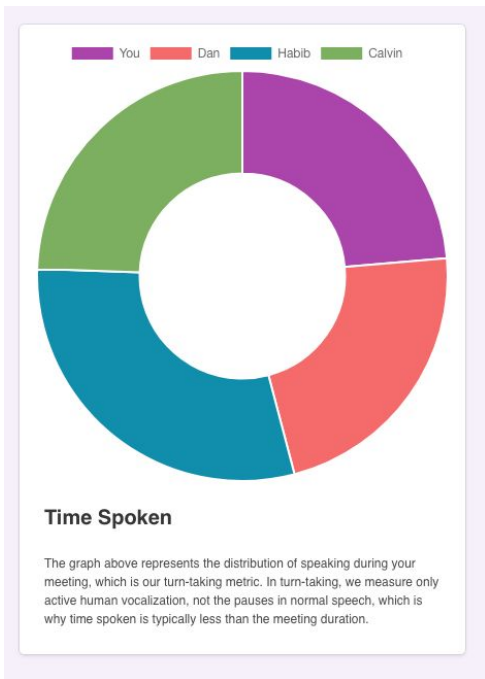
SBIR Phase I Grant

“Positive Effects of Feedback and Intervention for Engagement in Online Learning”



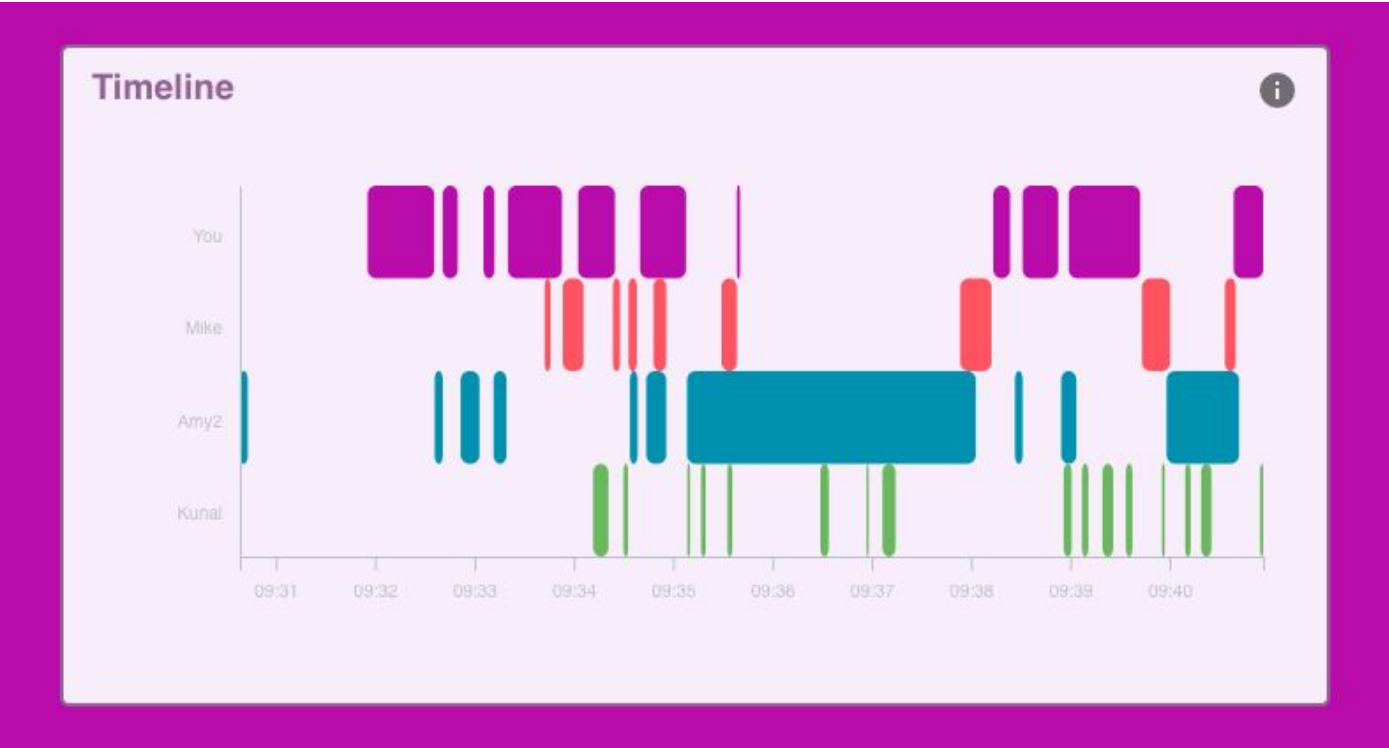
Feedback loops help people understand their effect on the group and are proven to change behaviors and build more trust.

Dominance & Turn Taking

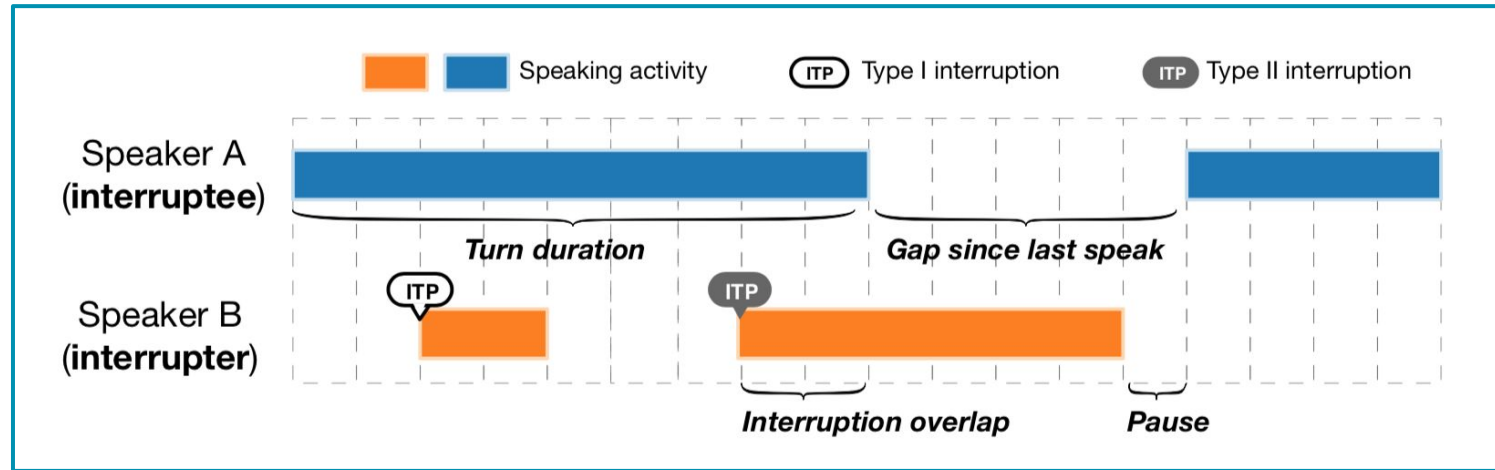


**all names in this example report are made-up

Engagement & Energy



Interruption & Bias



Two types of interruptions

Type I

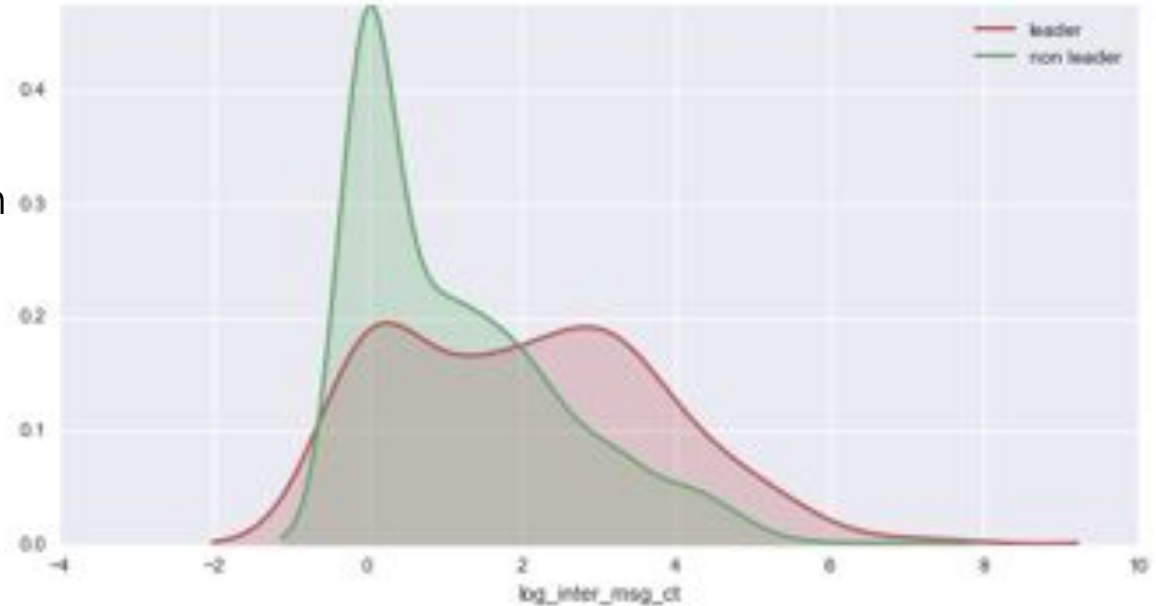
- cooperative interruption (agreement, positive)
- unsuccessful disruptive interruption (disagreement, negative)

Type II

- successful disruptive interruption

Prediction of Future Course Leaders

- Regardless of total communication volume, *class leaders* interact with more diverse set of people and groups, other than their own
- This is a *network effect*

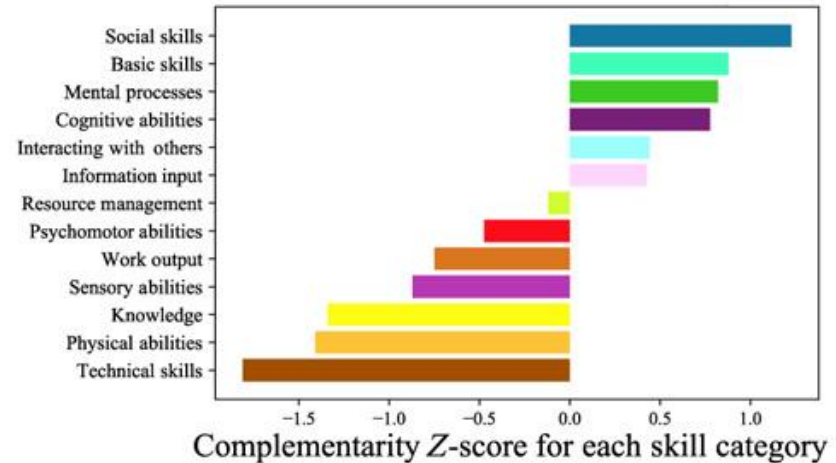


Looking at even simple communication patterns — through the right lens — can give you a lot of insight into the dynamics of teams and the behaviors of individuals.

Ongoing Research and Development

Area of active, ongoing research for Riff (and many others):

- How does peer learning affects outcomes; how can we make the actual learning better
- Researching how Riff helps the development of workplace soft skills
- Running NEXT Canada course two more times this year (June and September launches)
- Seeking additional partners to integrate peer learning tools into their courses



Thank You!

beth@rifflearning.com

617.340.9993