Special Project 10/17 HW2

What can we do with Self-Supervised Learning?

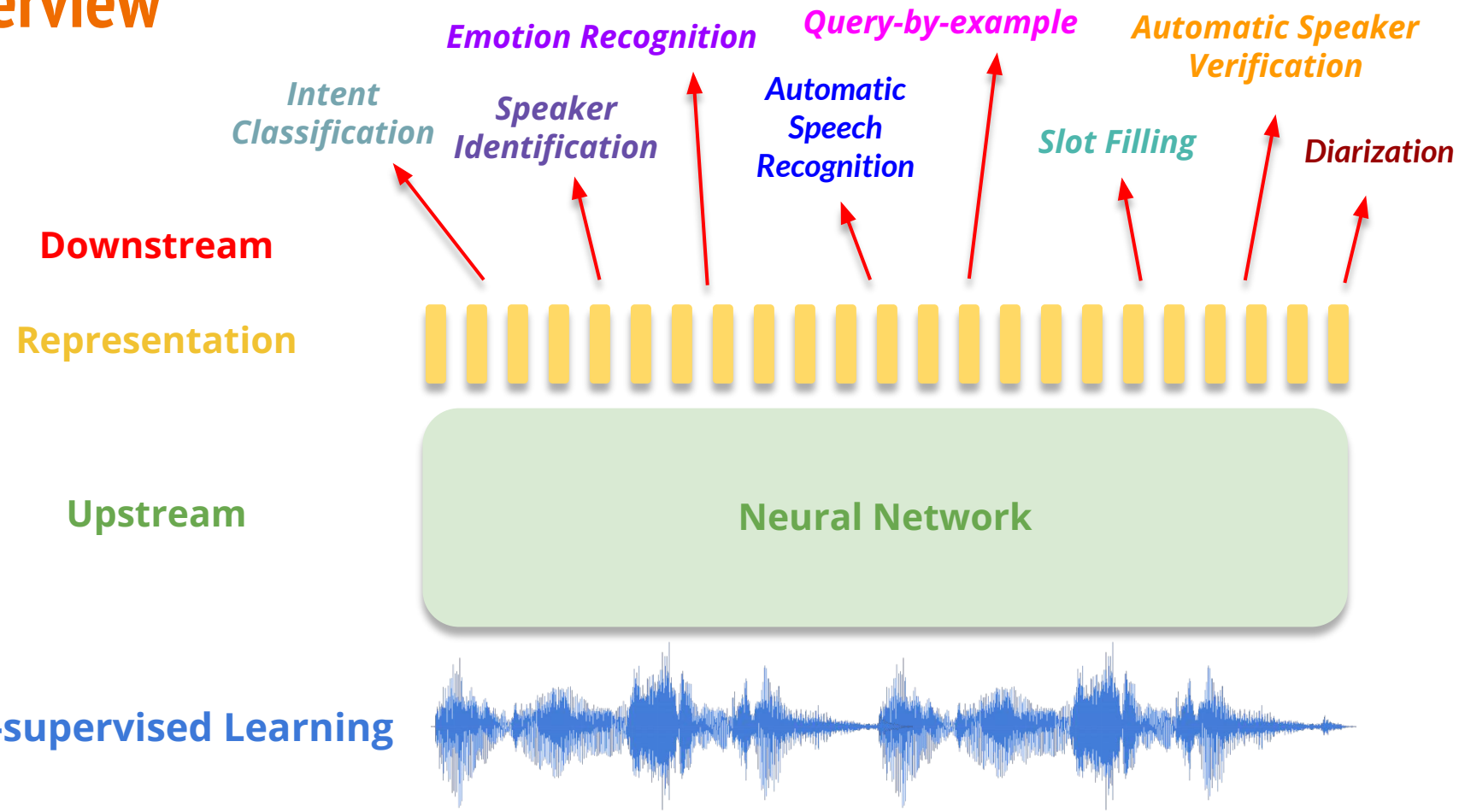
Andy T. Liu
liuandyt@gmail.com

For **S**elf-**S**upervised **S**peech
Pre-training and **R**epresentation **L**earning

S3PRL
SPEECH TOOLKIT

Tutorial link: https://youtu.be/PkMFnS6cjAc
Repo link: https://github.com/s3prl/s3prl
Paper link: https://arxiv.org/abs/2105.01051

Overview


Intent Classification
Speaker Identification
Emotion Recognition
Automatic Speech Recognition
Query-by-example
Slot Filling
Automatic Speaker Verification
Diarization
Downstream
Representation
Upstream
Neural Network
Self-supervised Learning

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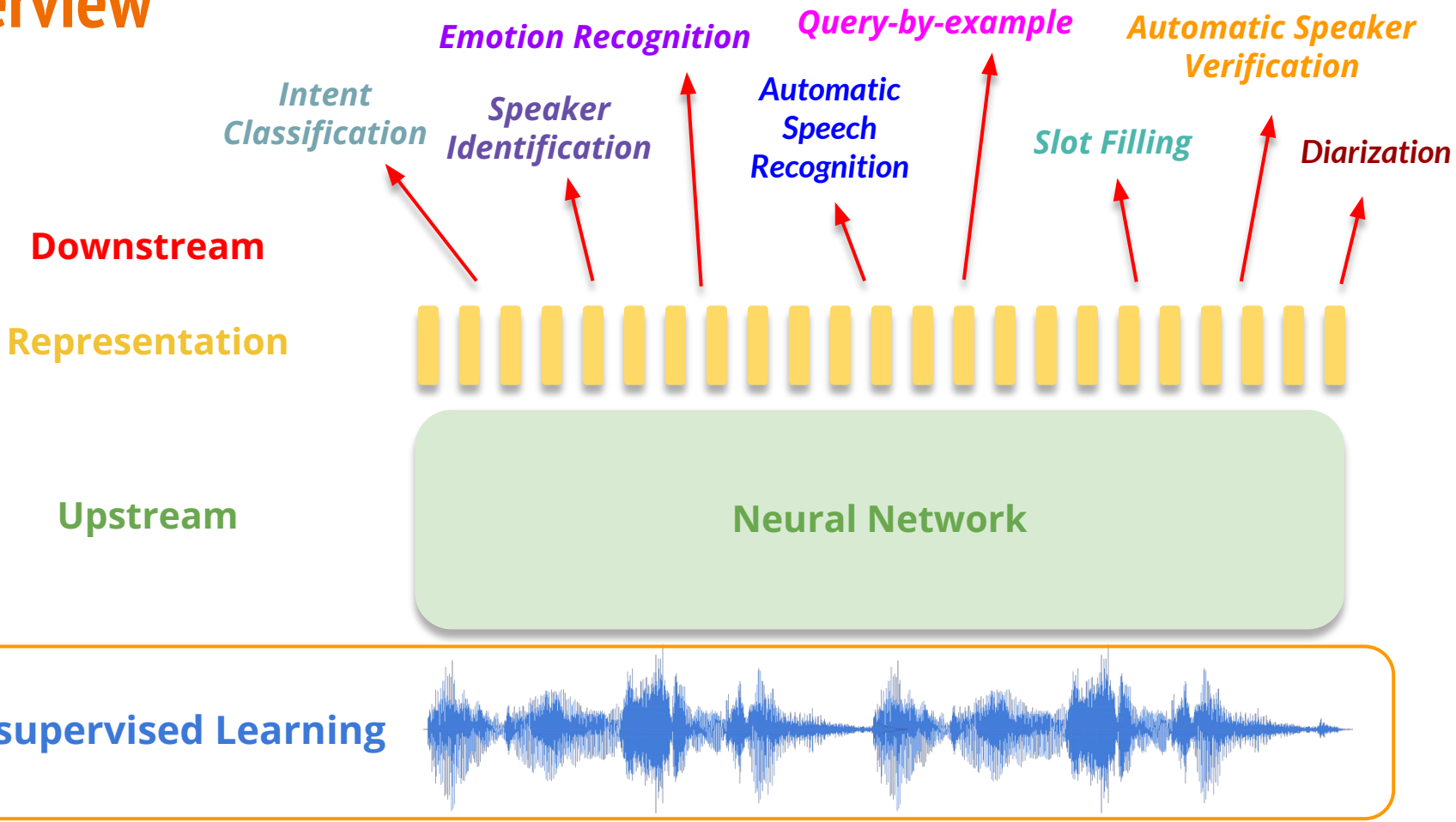
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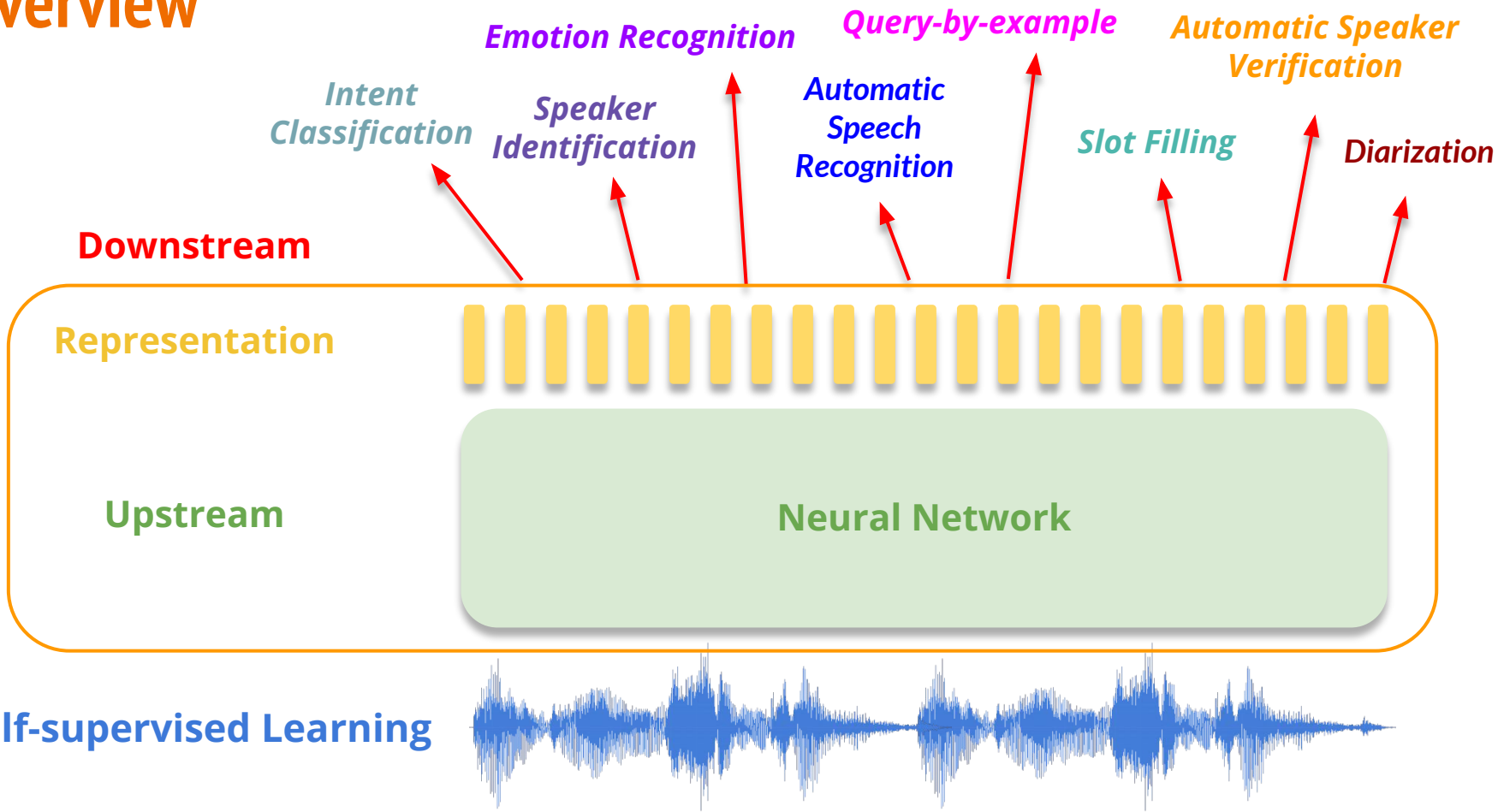
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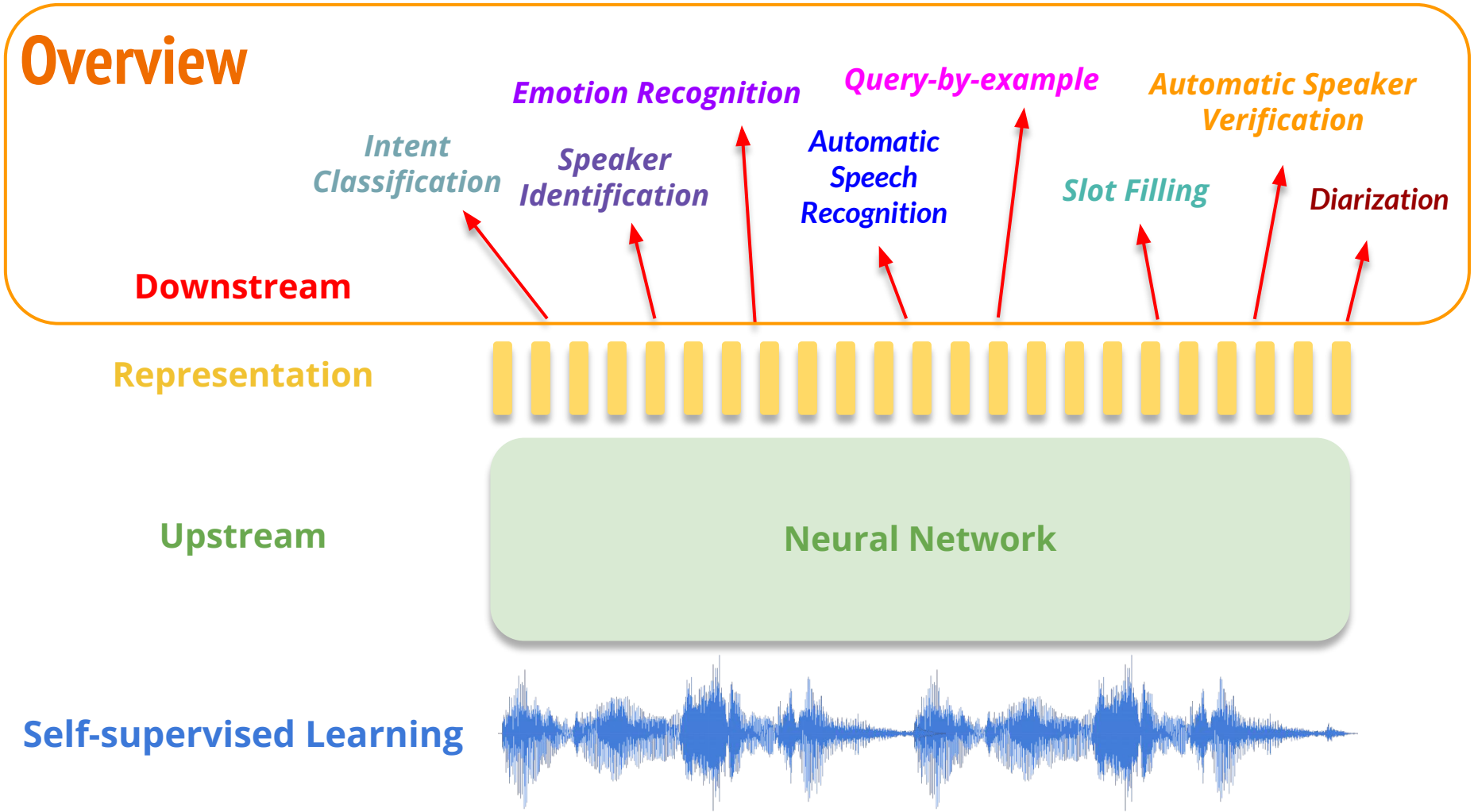
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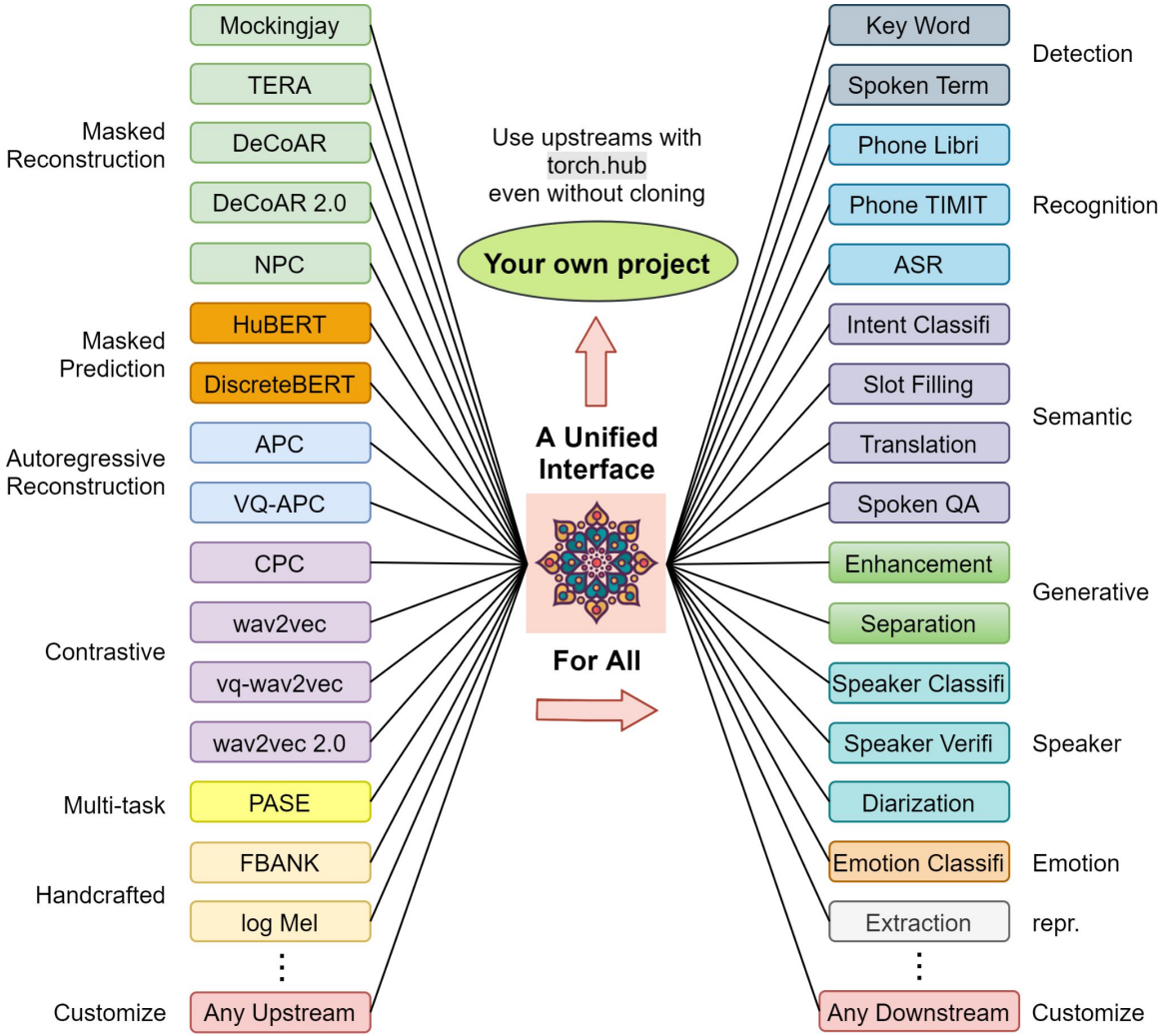
S3PRL Features

- Upstream Pre-training
- Upstream Hub
- Downstream fine-tuning
- SUPERB Challenge



How to pass this flexiable exercise?

Earn >= 3 points

- **Track 1 (1 point)**
- **Track 2-1 (2 points - team up)**
- **Track 2-2 (3 points - team up)**
- **Track 3-1 (2 points - team up)**
- **Track 3-2 (3 points - team up)**
- **Track 4 (5 points - team up)**

“2 points team up” + “1 points” by your own group is OK.
“2 points team up” x2 is also OK.
“1 point” x3 is also OK.

Friendly warning: Some are easy some are hard, first come first serve! Also keep in mind that you’ll have to present what you did when its due.

Team up: two groups can join and become a larger group for harder tracks

Track 1

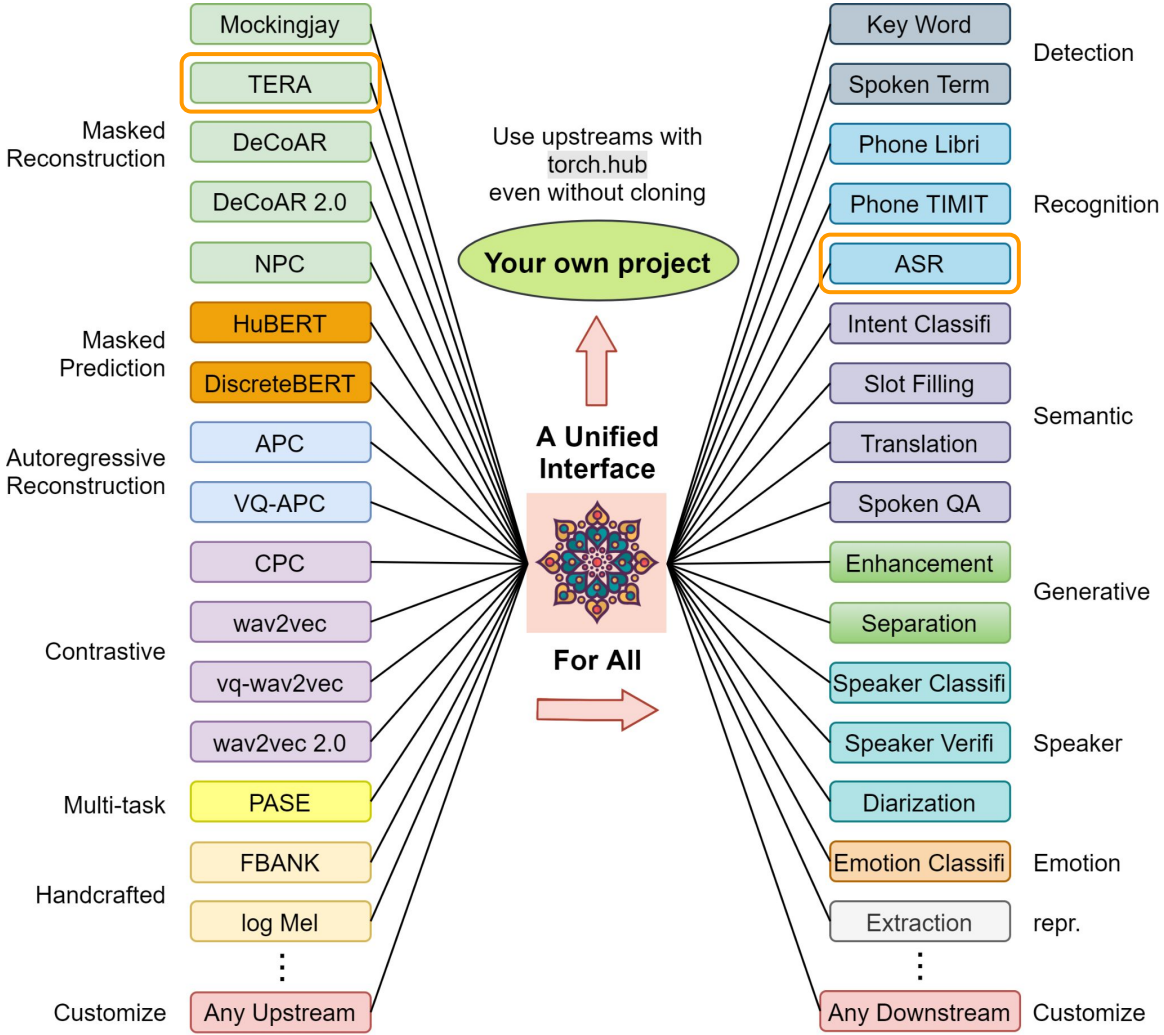
1. Run an **“upstream and downstream” pair** of your choice **(1 point)**
2. Read the description of the downstream task and prepare data.
3. Run the experiemnt and report your results / observations.
4. An unique *“upstream and downstream” pair* counts for 1 point, you can do different pairs to get more points.
5. Setting different hyperparameters for an existing pair also counts for 1 point.

Documentation: link

Tutorial: link

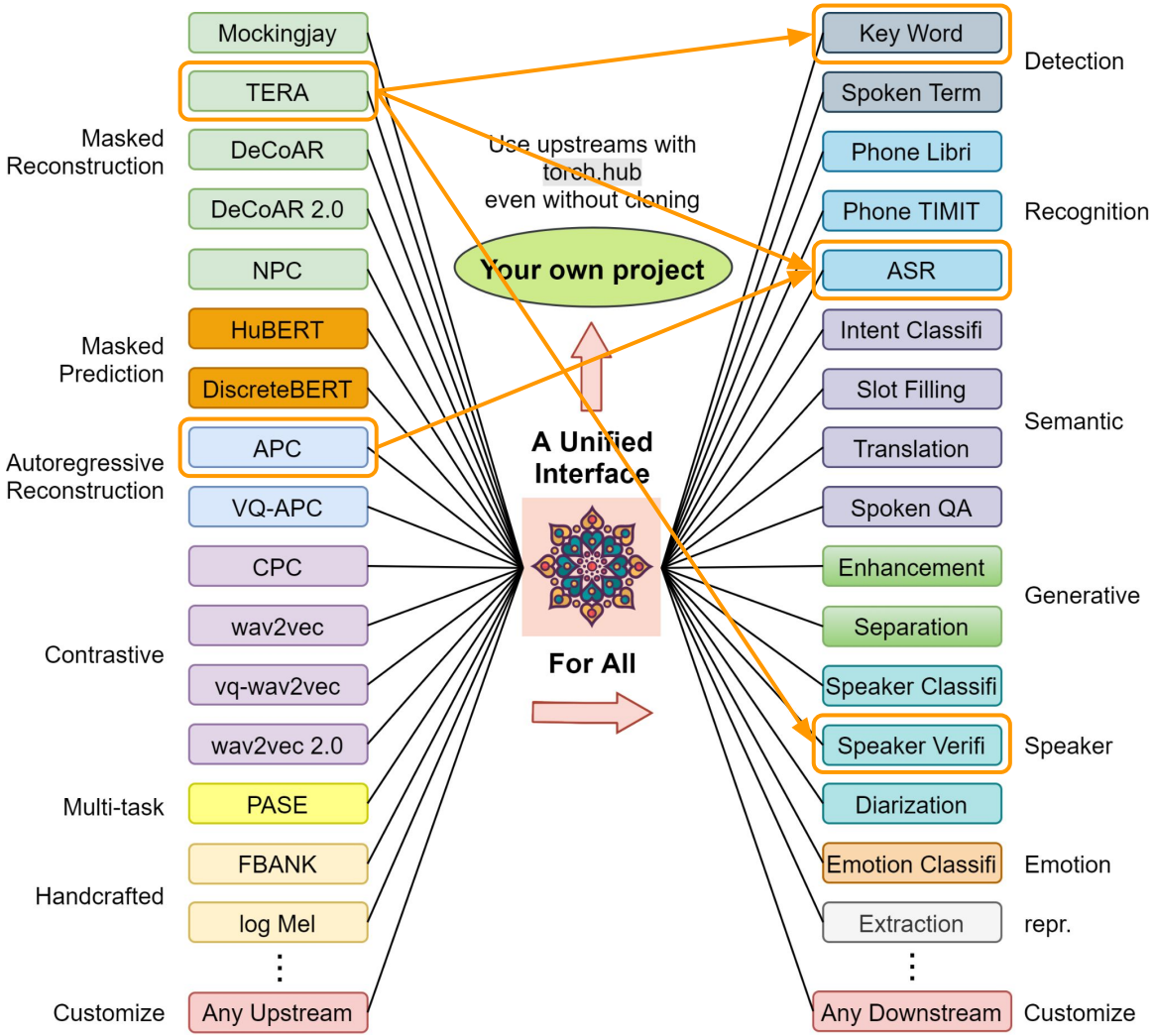
Track 1 (example)

- Choose one from the left.
- Choose one from the right.



Track 1 (example)

- Choose one from the left.
- Choose one from the right.
- Each unique pair counts **1 point**.



Available tasks to choose from

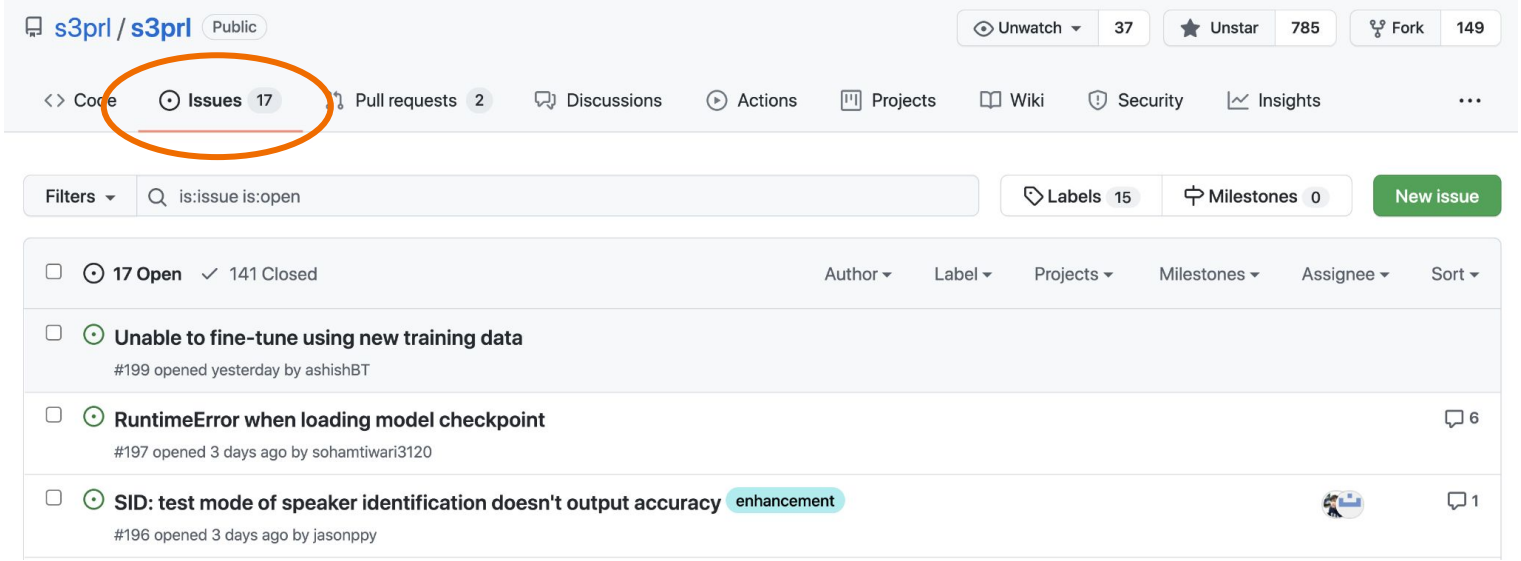
ID	Task Name	Category	Paper	Challenge public-set
PR	Phoneme Recognition	Content	V	V
ASR	Automatic Speech Recognition	Content	V	V
KS	Keyword Spotting	Content	V	
QbE	Query-by-Example	Content	V	V
SID	Speaker Identification	Speaker	V	V
ASV	Automatic Speaker Verification	Speaker	V	V
SD	Speaker Diarization	Speaker	V	V
ER	Emotion Recognition	Paralinguistics	V	V
IC	Spoken Intent Classification	Semantics	V	
SF	Spoken Slot Filling	Semantics	V	
ST	Speech Translation	Semantics		V
SE	Speech Enhancement	Generation		V
SS	Source Separation	Generation		V
VC	Voice Conversion	Generation		

Friendly warning:
Some are easy some are hard, first come first serve!

Track 2-1

Resolve an open issue without making a pull request (2 points - team up)

Comment under the issue and tag me: **@andi611**, I will close it if applicable.



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Track 2-2

Resolve an open issue with a pull request (3 points - team up)

Start a pull request, I will approve it if applicable.
See here for detailed steps:

Development pattern for contributors

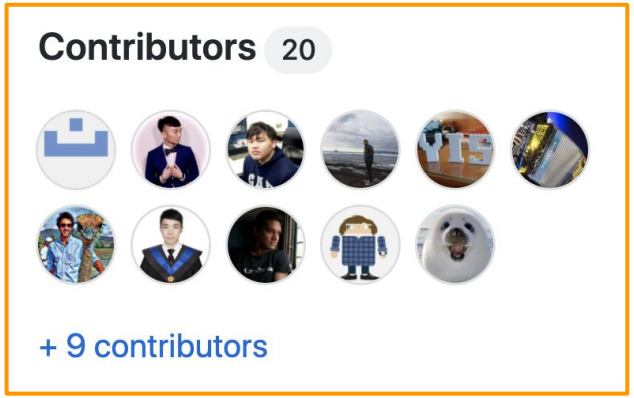
1. Create a personal fork of the main S3PRL repository in GitHub.
2. Make your changes in a named branch different from `master`, e.g. you create a branch `new-awesome-feature`.
3. Contact us if you have any questions during development.
4. Generate a pull request through the Web interface of GitHub.
5. Please verify that your code is free of basic mistakes, we appreciate any contribution!

Friendly warning:
Some are easy some are hard, first come first serve!

Track 2-2

Resolve an open issue with a pull request (3 points - team up)

Start a pull request, I will approve it if applicable.
See here for detailed steps.



Bonus: This will make you a official contributor to the project!

Track 3-1

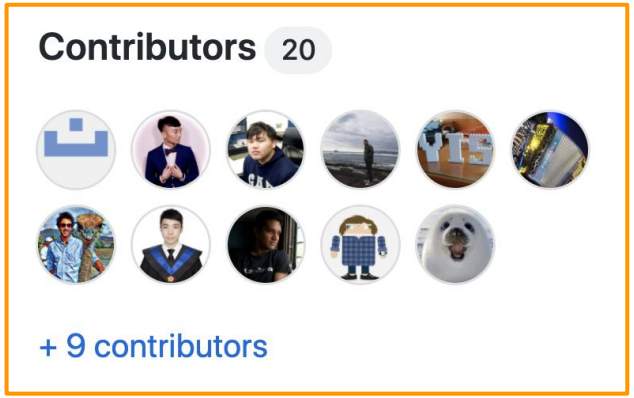
Open a new issue without making a pull request (2 points - team up)

**Has to be a valid issue / problem / bug that applies to all users,
asking random questions or your own enviroment issues do NOT count.**

Track 3-2

Open a new issue and resolve with pull request (3 points - team up)

Has to be a valid issue / problem / bug that applies to all users,
asking random questions or your own enviroment issues do NOT count.



Bonus: This will make you a official contributor to the project!

Track 4

Use this toolkit on your own application! (5 points - team up)

- **New dataset**
- **New downstream task**
- **New upstream**
- **Your own research topic**
- **Anything reasonable or related**

Bonus for choosing this track:
You do not have to be fully finished by the deadline,
you can present a reasonable amount of progress that you've made.

Submission

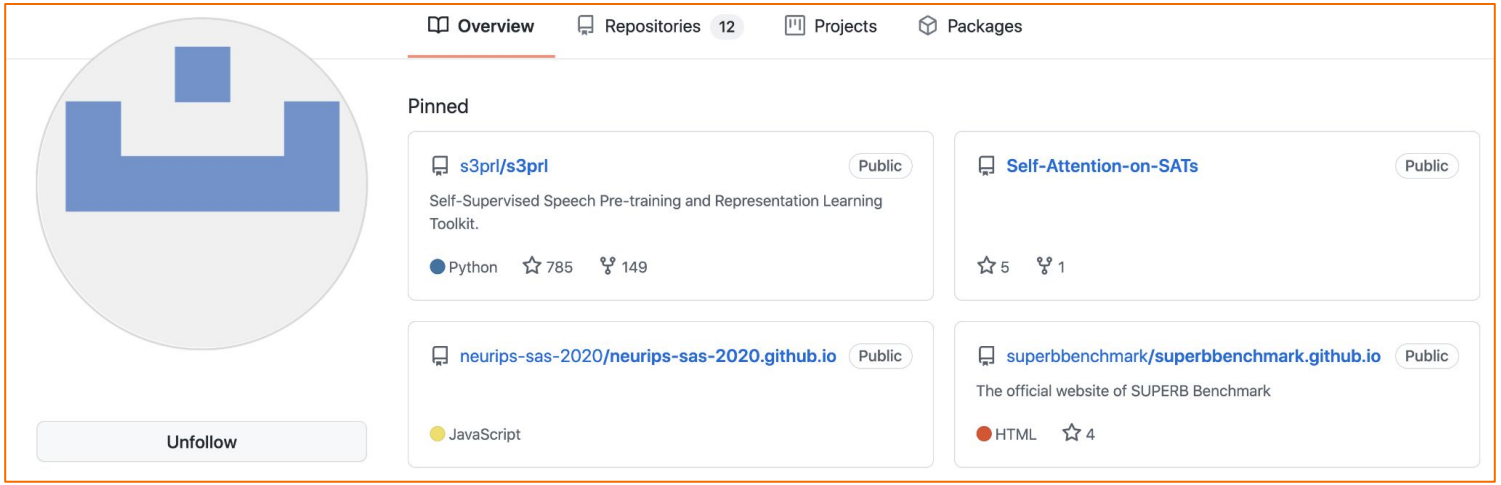
1. **For tracks 2~4, comment on FB post**
   a. a single sentence is sufficient (e.g. paste the open issue link)
   b. briefly describing what you plan to do
   c. **to avoid overlap between groups**

2. **Presentation (on 10/31)**
   Things you might want to cover, **not limited to or mandatory of**:
   a. The track(s) you choose
   b. The setting of your track
   c. Screen shots (proofs) of your training / inference results
   d. Screen shots (proofs) of your contribution / pull request / issue / comments
      i. What was it about & how did you solve the issue
   e. Your observations
   f. Your user feedback of the toolkit

3. **Do not have to submit any code**
4. **No restriction on presentation format**

Recommandations and Goals

1. Team up on the harder tracks.
2. Make pull requests.
3. Become a contributor.
4. Then, you can happily **pin this project on your Github homepage**:



What to do if you encounter any problem

1. **ALWAYS** check if there are any related **existing** (open / closed) issues first.

2. Ask you question:
   a. Project related: Comment on the *FB post*
   b. Technical related: Open a new issue on the *S3PRL Github Repo*
      i. NO points.
      ii. Tag me with **@andi611** and I will reply you ASAP.

3. Email me
   a. if it is something personal or you don't want to go public.

Questions?

mailto:liuandyt@gmail.com