

● Mobile App: We will implement mobile application and provide below services to users.

- Class suggestion: We are going to suggest classes that the system thinks that would match the user interest.

- Class Lists: We will list all courses in UCI to make user know what classes are opened.

- Class reviews: This will be linked to krums, to obtain user reviews from a specific course.

● UCI WebSoc: We will crawl courses information from here for initial data collection.

● UCI EEE : We will crawl user's class history from personal UCI webpage to get user data.

● PHP scripts Crawler: We will use php script with cURL library to do all web crawling task.

● My database: This will be our main database using MySQL. Php script will extract information we need from Krums event data which provide by Event shop. Such information will store in our MySQL database.

- **API Server:** We will use an ubuntu Amazon Web Service(AWS) which run services of nginx, php-fpm, mysql as API server to provide json data to mobile Apps through http protocol. API will be developed in php, and mobile clients' query will be used in the API server to get recommended class lists. API server will respond with json data.
- **Krums SDK:** Krums and Event shop will be used in our platform to collect user class reviews and send the event data to php script to analyze it by using Event shop API.
- **PHP cron job:** Php script will run every 5 minutes by crontab to update mysql database.
- **Event shop:** Event shop will be used with Krums to collect user reviews.

Server End Implementation: End server is an Ubuntu system which is built on AWS host and it runs such services: Mysql, Nginx, php-fpm, redis. The server is implemented by using PHP and crawling program that is used to crawl the data from UCI web page is built by PHP Curl library. This program also have capability of logging in to EEE system of UCI and collecting all users classes lists and data from WebSoc.

We use 4 MySQL tables: Class, Class time, Myclass, Insider user.

a) **Class:** for quick searching classes we crawled all classes from the UCI schedule of classes. We build My SQL indexes of class title, teacher, code, and department in class table index for myclass table.

Search: <input type="text" value="code"/> <input type="button" value="="/> <input type="text" value=""/> <input type="button" value="Q"/> <input type="text" value="Search"/> <input type="button" value="Filter"/>													
id	code	codes	type	dept	dept_title	title	code2	teacher	week	start_time	end_time	stime	room
2	ZU	ZUA	Lec	Ac Eng	Academic English...	ACADEMIC WRITING	20002	STERN, H.		0	0	TuTh 3:30-4:50p	IAB 128
3	20	20A	Lec	Ac Eng	Academic English...	ACADEMIC WRITING	20009	LENZ, K.		0	0	TuTh 9:30-10:50	DBH 1427
4	20	20B	Lec	Ac Eng	Academic English...	ACADEMIC WRITING	20021	VIMUTTINAN, C.		0	0	MWF 10:00-10:50	RH 190
5	20	20B	Lec	Ac Eng	Academic English...	ACADEMIC WRITING	20022	LEE, S.		0	0	MWF 9:00-9:50	RH 190
6	20	20B	Lec	Ac Eng	Academic English...	ACADEMIC WRITING	20023	CRUZ, C.		0	0	MWF 1:00-1:50p	DBH 1425
7	20	20B	Lec	Ac Eng	Academic English...	ACADEMIC WRITING	20024	LEE, G.		0	0	MWF 1:00-1:50p	LLIB 101A
8	20	20B	Lec	Ac Eng	Academic English...	ACADEMIC WRITING	20026	BOOKMAN, B.		0	0	TuTh 2:00-3:20p	LLIB 101A
9	20	20B	Lec	Ac Eng	Academic English...	ACADEMIC WRITING	20027	ESLAMI, M.		0	0	TuTh 5:00-6:20p	HH 214
10	20	20B	Lec	Ac Eng	Academic English...	ACADEMIC WRITING	20028	VONK, D.		0	0	MWF 4:00-4:50p	SSL 117
11	20	20B	Lec	Ac Eng	Academic English...	ACADEMIC WRITING	20029	ESLAMI, M.		0	0	TuTh 2:00-3:20p	HH 220
12	20	20B	Lec	Ac Eng	Academic English...	ACADEMIC WRITING	20030	BOOKMAN, B.		0	0	TuTh 5:00-6:20p	HH 232
13	20	20B	Lec	Ac Eng	Academic English...	ACADEMIC WRITING	20032	VIMUTTINAN, C.		0	0	MWF 11:00-11:50	RH 190
14	20	20B	Lec	Ac Eng	Academic English...	ACADEMIC WRITING	20033	INTHAVONG, J.		0	0	MWF 12:00-12:50p	SSL 159
15	20	20B	Lec	Ac Eng	Academic English...	ACADEMIC WRITING	20034	ESLAMI, M.		0	0	TuTh 3:30-4:50p	HH 210
16	20	20B	Lec	Ac Eng	Academic English...	ACADEMIC WRITING	20035	WOLFF, B.		0	0	MWF 1:00-1:50p	SSL 105

b) Class time: time features are combined with the previous database and also the features of days are represented and used when searching effectively based on times.

Search: <input type="text" value="id"/> <input type="button" value=""/> <input type="button" value="="/> <input type="button" value=""/> <input type="button" value="⊗"/> <input type="text" value="Q Search"/> <input type="button" value="Filter"/>													
id	cid	code	codes	type	week	start	end	stime	dept	title	max	room	
1	1	1	20 20A	Lec	2	840	920	TuTh 2:00- 3:20p	Academic English and ESL (started...	ACADEMIC WRITING	14	SSL 159	
2	1	1	20 20A	Lec	4	840	920	TuTh 2:00- 3:20p	Academic English and ESL (started...	ACADEMIC WRITING	14	SSL 159	
3	2	2	20 20A	Lec	2	930	1010	TuTh 3:30- 4:50p	Academic English and ESL (started...	ACADEMIC WRITING	14	IAB 128	
4	2	2	20 20A	Lec	4	930	1010	TuTh 3:30- 4:50p	Academic English and ESL (started...	ACADEMIC WRITING	14	IAB 128	
5	3	3	20 20A	Lec	2	570	650	TuTh 9:30-10:50	Academic English and ESL (started...	ACADEMIC WRITING	0	DBH 1427	
6	3	3	20 20A	Lec	4	570	650	TuTh 9:30-10:50	Academic English and ESL (started...	ACADEMIC WRITING	0	DBH 1427	
7	4	4	20 20B	Lec	1	600	650	MWF 10:00-10:50	Academic English and ESL (started...	ACADEMIC WRITING	0	RH 190	
8	4	4	20 20B	Lec	3	600	650	MWF 10:00-10:50	Academic English and ESL (started...	ACADEMIC WRITING	0	RH 190	
9	4	4	20 20B	Lec	5	600	650	MWF 10:00-10:50	Academic English and ESL (started...	ACADEMIC WRITING	0	RH 190	
10	5	5	20 20B	Lec	1	540	590	MWF 9:00- 9:50	Academic English and ESL (started...	ACADEMIC WRITING	12	RH 190	
11	5	5	20 20B	Lec	3	540	590	MWF 9:00- 9:50	Academic English and ESL (started...	ACADEMIC WRITING	12	RH 190	
12	5	5	20 20B	Lec	5	540	590	MWF 9:00- 9:50	Academic English and ESL (started...	ACADEMIC WRITING	12	RH 190	

c) Myclass: database contains the user history class data that was extracted from the EEE. It includes class information such as department, code, id, and the quarter of the class is opened.

Search: id =							
id	depart	uid	cid	code	code2	quarter	create_time
61	COMPSCI	6	601	225	34860	20171	2017-03-19 12:19:45
62	COMPSCI	6	609	260	34940	20171	2017-03-19 12:19:45
63	SYS	6	1735	240	37650	20171	2017-03-19 12:19:45
64	CSE	8	648	46	16160	20171	2017-03-19 15:02:28
65	COMPSCI	8	601	225	34860	20171	2017-03-19 15:02:28
66	COMPSCI	8	607	253	34920	20171	2017-03-19 15:02:28

d) Insider user: All the user data will be stored in the server. Once they log-in the token, name, and UCI ID is all stored in the database.

Communication protocol between Android application and Server:

Android client queries data to Server API by using HTTP Post Request. The Post parameters are sent to server in Json form. Server API reply with Json form data so that the client can get data. The json format that we used in our system to communicate with server is shown as below using API debug tools called Postman

Search:

id	uci_id	name	token	uci_token	create_time
6	yoonkyus	Yoon Kyung Shon	aeb641d790f36609ccf0d324e75e...	J81nF1hMgWXqkd3pfTVZg9a2FuaPIKCictwIkDkrq8HBcBQhk87rB7k7RkNqUfyX	2017-03-19
7	yoonkyus1	UBLIC "-//IETF//DTD HTML 2.0//...	6cafe5e4b7a01375b8c91be836a6...	no_key; path=/; domain=.uci.edu/Content-Length: 4117/Content-T	2017-03-19
8	yousongz	Yousong Zhang	77ed57d9d9238d02d79f82f18da...	oS2tR25kZUU6nv8h7h5wMulKKeFzuiKJ1C2JvXTkHEhVZI2XQYjsiuCTz7ITgSs7	2017-03-19

POST

Body Cookies (1) Headers (8) Tests Status: 200 OK Time: 5246 ms

Pretty Raw Preview JSON

```

1 {
2   "result": 0,
3   "message": "success",
4   "data": {
5     "token": "dd15f178afcea692e5ce263098890ea1",
6     "name": "Yousong Zhang",
7     "classes": [
8       {
9         "id": "648",
10        "department": "CSE",
11        "code": "46",
12        "title": "DATA STRC IMPL&A&NLS",
13        "professor": "PATTIS, R.",
14        "rate": "3",
15        "address": "SSLH 100",
16        "time": "MWF 11:00-11:50"
17      },
18      {
19        "id": "601",

```

Implementation using Android(not included in zip):

a) Log-in Activity

UCI Insider

UCI Insider Log-In

UCI ID
jaehwanc

password
.....

b) User Information Activity

UCI Insider

USER Information

You are taking...

NXT GEN SRCH SYSTMS

DIST COMPUTER SYS

FUND ALGORITHMS

c) Class Details

UCI Insider

Classes Details

Class Name: NXT GEN SRCH SYSTMS

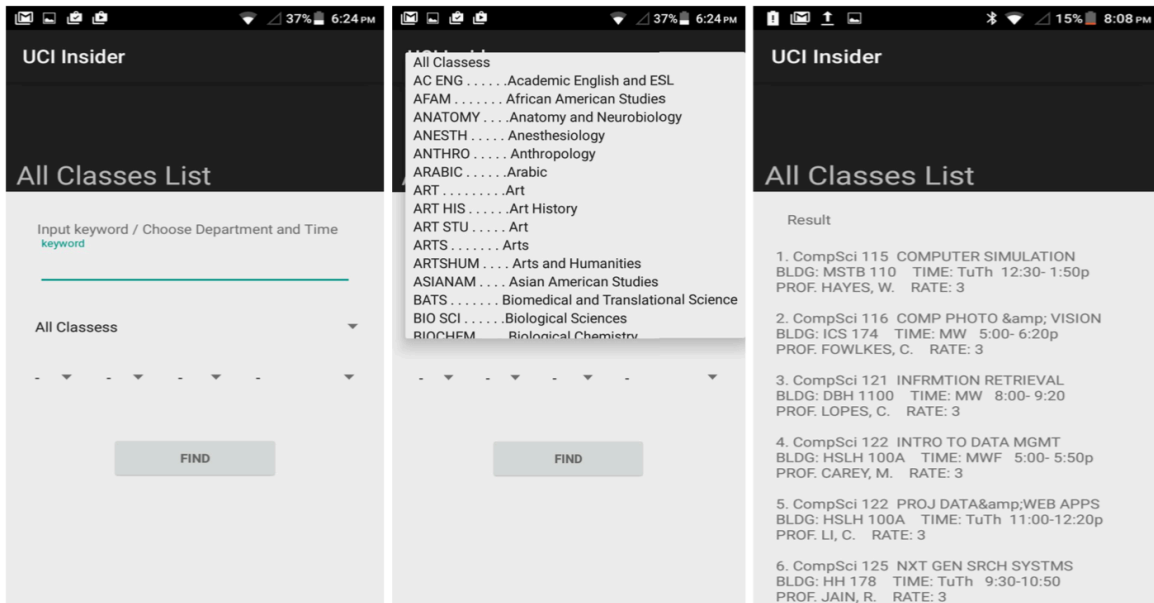
Professor: JAIN, R.

Class Time: TuTh 9:30-10:50

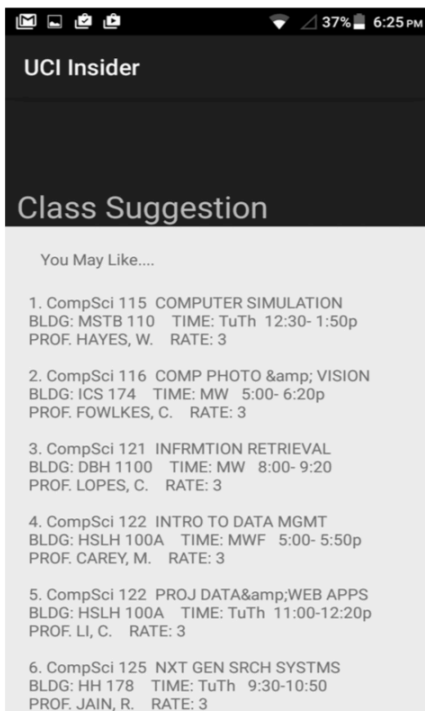
Class Location: HH 178

Rating: 3

d) Searching Classes Activity



e) Suggestion of classes Activity



f) Class review using Krumbs

