Sample of Poster Layout
Portrait Orientation

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FloodFeed: An Ontology-Based Data Feed for Flood Sensor Knowledge Integration

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INTRODUCTION

FloodFeed is basically a collection of sensor data that is organized is XML format for easily retrieval and reusable in the virtual domain. FloodFeed is inspired by the well known Rich Site Summary or Really Simple Syndication (RSS) concept to distribute information among the public community.

Knowledge integration (KI) is a well known concept to create new knowledge or improvise existing knowledge.

Utilizing KI in the virtual domain requires consistencies and generic concept which can represented as ontology. In order to develop the ontology for KI requires the understanding of the essential processes which is proposed in this research as; Identification (i), Creation (C), Assimilation (A) and Evaluation (E) or abbreviated as iCAE.

Since flood is a major problem is Malaysia, merging FloodFeed with KI is introduce as potential solution that harness the power of crowd to solve flood related problems.

PROBLEM STATEMENTS

The technological advancement in ICT industry has brought modern world new methods and approaches in knowledge sharing, integration and dissemination but has yet to be fully utilized.

Existing methods to disseminate knowledge related to flood through public websites (Katuk et al., 2009) are currently operated by appointed government agencies in silo basis (Othman et al., 2013).

Knowledge related to flood lack of consistencies in terminologies and definition which require the need for ontology (perdurant) for effective integration.

Systems developed for solving flood disaster such as early warning system are still lack of effectiveness that can be further enhanced and improved with more contributions from the public and agencies.

OBJECTIVES

To introduce essential KI processes as mechanism for promoting standardization in integrating FM-related knowledge among different agencies for public users' benefits which include social network community.

To develop ontology derive from KI essential processes as a tool for ontology-driven application development providing common understanding and shared vocabulary in flood management.

To demonstrate and evaluate the practicality of proposed KI essential processes and ontology through flood sensor towards reaching the expected objectives in a real-world implementation.

METHODOLOGY

Problem Identification and Motivation
Absence of a mechanism to manage flood related knowledge and inadequate flood information of to be processed significantly influence the accuracy and effectiveness of flood support operations/systems.

↓

Definitions of the objectives for a solution
Establish a knowledge management platform with KI as the central process and develop an ontology for KI.

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Design and Development
Identify the essential KI processes development of KI upper layer ontology (perdurant and endurant ontology)

↓

Demonstration
XML based flood sensor is developed comply to the ontological backbone

↓

Evaluation
Results from the demonstration will be evaluated to determine the success of the ontology

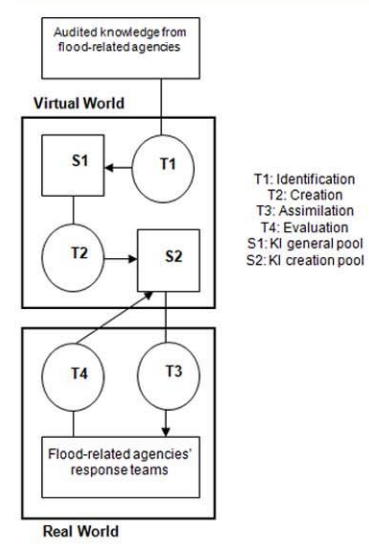
↓

Communication
Feedback from domain experts will be used as reference for improvements.

FloodFeed XML Data Format

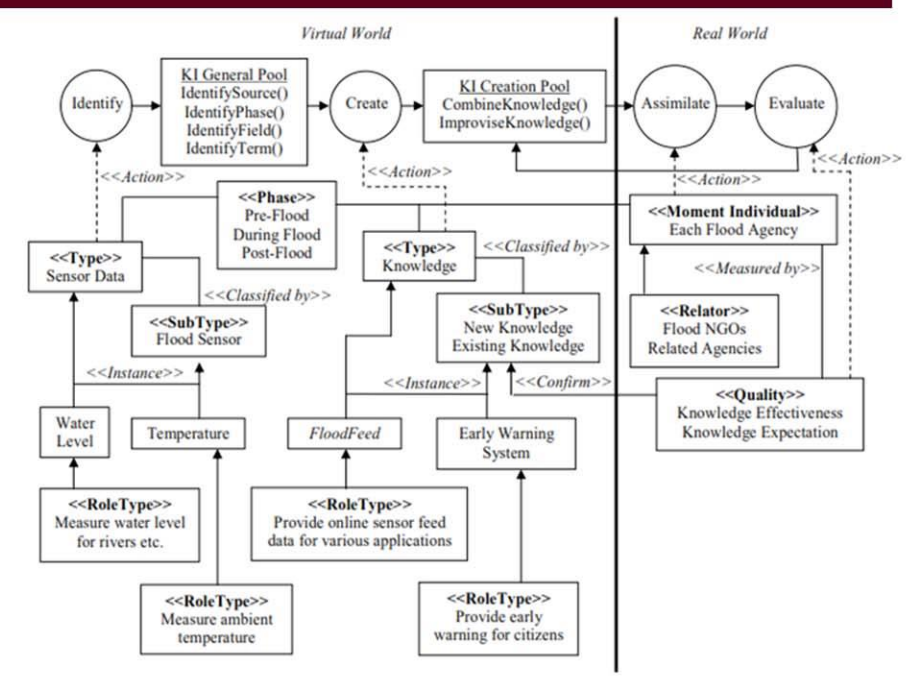
```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<FloodFeed>
    <location name="sensor2" lat="3.41625"  lon="113.8154">
        <waterlevel>15</waterlevel>
        <temp>37</temp>
    </location>
</FloodFeed>
```

KI ONTOLOGY AND FLOOD SENSOR



T1: Identification
T2: Creation
T3: Assimilation
T4: Evaluation
S1: KI general pool
S2: KI creation pool

KI Construction Model



KI Perdurant and Endurant Ontology for Flood Sensor

Flood Mapping to demonstrate the implementation of crowdsource flood sensor as an example of implementation.

Reference:
M. Rodzi, M. Z., Zakaria, N. H. and Ahmad, M. N. (2014), *FloodFeed*: **An Ontology-Based Data Feed for Flood Sensor Knowledge Integration,** *In Proc. for KMICe 2014*, **PID82**

Development of an aptamer based biosensor for environmental monitoring

Jon Ashley, Kaili Ji, and Sam F.Y.Li

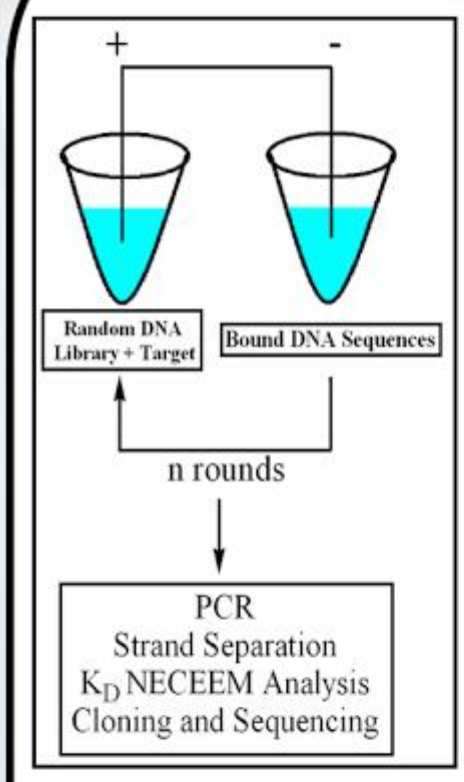
Department of Chemistry, National University of Singapore, 3 Science Drive 3, Singapore 117543.

1. Introduction

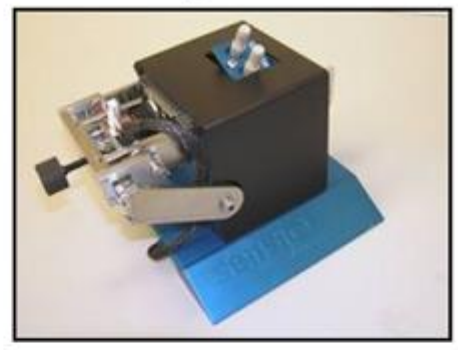
Proteomic studies of water Daphna (water fleas) have shown that levels of catalase and GST proteins increase in response to exposure to pollutants in water. Therefore it is possible to use Water Daphna for environmental monitoring of rivers and lakes. The aim of this study is to develop an aptamer based SPR sensor to detect changes in catalase response in Daphna on exposure to nanoparticle based pollutants. Aptamers are ssDNA that bind to different biomolecules. They are an attractive alternative to antibodies due to their smaller size and stability.

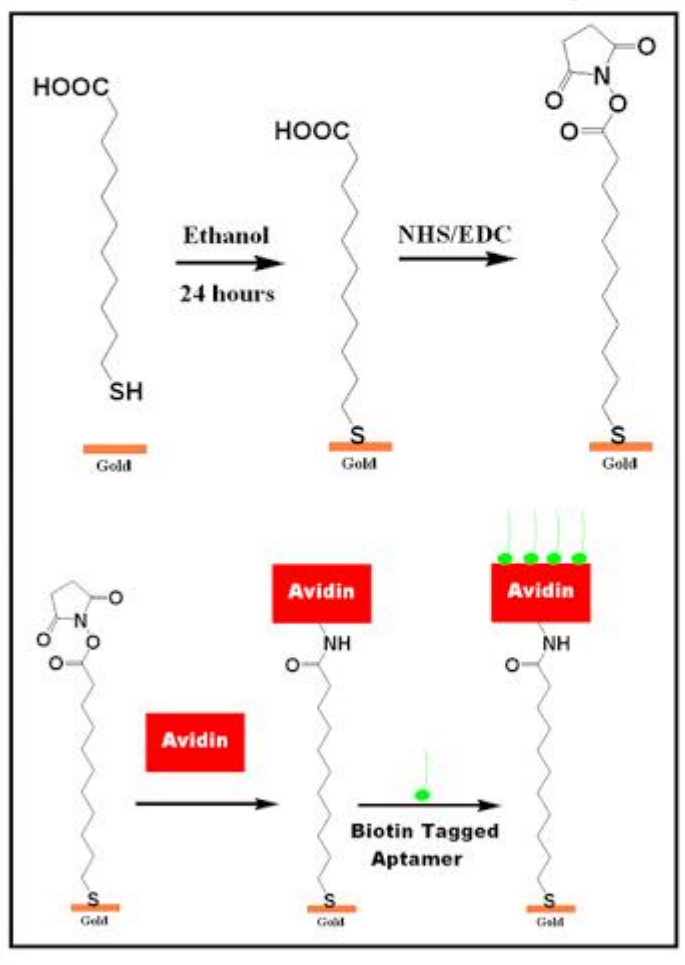
(Above) Water Daphna found in most lakes and waterways

2. Methodology



(**Left**) Catalase aptamers were selected using non-SELEX. Each fraction is amplified using PCR. The strands of the PCR products are separated and the bulk affinity binding K_D was measured using Non equilibrium capillary electrophoresis of equilibrium mixtures (NECEEM). Fractions with the highest binding were cloned and sequenced.



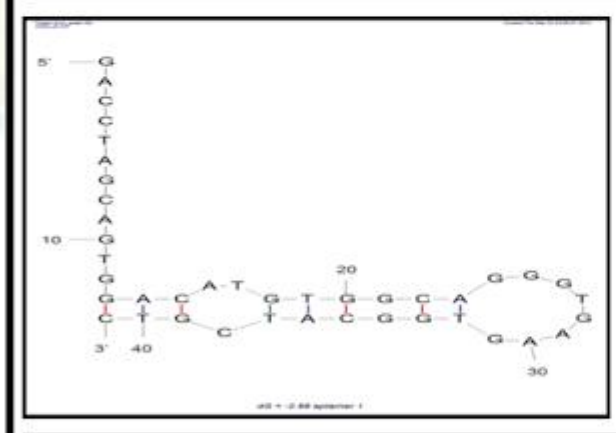


(**Above**) The sensiQ discovery surface Plasmon resonance (SPR) machine. It is a dual flow based system commonly used to measure biological interactions.

(**Left**) The selected aptamer was then immobilized onto the SPR surface by amine coupling of avidin, followed by biotin capture The Limit of detection (LOD) and limit of quantitation (LOQ) were determined using a calibration plot.

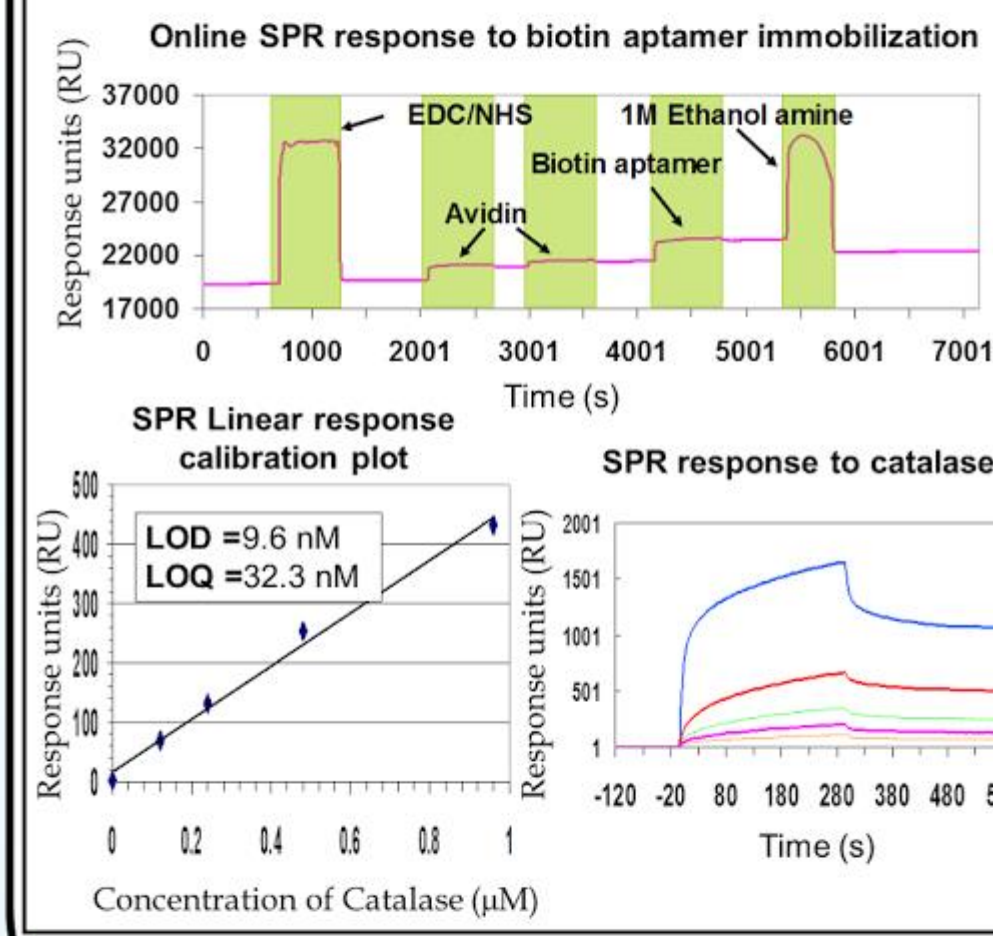
3. Results

Aptamer	Sequence	K_D NECEEM
CAT 1	GACCTAGCAGTGGACATGTGGCA GGGTGAAGTGGCATCGTC	0.237 μM ± 0.13



(**Above**) the sequence and binding affinity of CAT 1 aptamer.

(**left**) DNA secondary structure of CAT 1 under standard ionic conditions 100 mM [Na^+] and 2 mM [Mg^+].



(**Above**) online SPR response to biotin aptamer immobilization, linear calibration plot with LOD and LOQ and SPR response signal to catalase.

4. Conclusion

- Aptamer based SPR sensors show promising applications in bioanalytical and environmental applications.
- They are a viable alternative to antibodies and their use in research will become more widespread in the future.
- Water Daphna show great potential in routine environmental water monitoring.

5. Acknowledgments

We would like to thank the National University of Singapore, The Ministry of Education and The Singapore-Peking-Oxford Research Enterprise (SPORE) for financial support

6. References

Analyzing Educational Comments for Topics and Sentiments: A Text Analytics Approach

SMU SINGAPORE MANAGEMENT UNIVERSITY
School of Information Systems

Dr. Swapna Gottipati, Assistant Professor of Information Systems (Education)

Motivation

Student feedback

For improving teaching and learning effectiveness
Proxy indicator of teaching competency in annual appraisals.

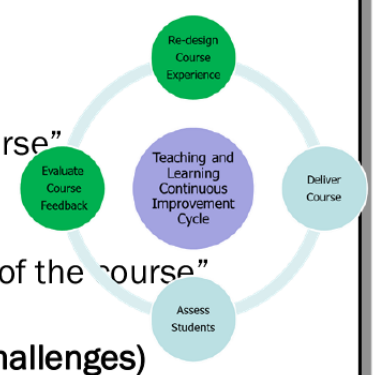
Types of Feedback

Qualitative Feedback

"Please provide some comments about the course"

Quantitative Feedback

"On a scale of 0-7 how did you like the content of the course"



Qualitative feedback is difficult to analyse (text challenges)

COURSE_CODE	COURSE_TITLE	ACAD_YEAR	ACAD_TERM	QUESTION	ANSWER
IS102	Computer as an	2012-13	2	18	Patience, approachable, professional
IS102	Computer as an	2012-13	2	19	Excellent, strongly recommended
IS102	Computer as an	2012-13	2	18	s a great prof. She has great skills
IS102	Computer as an	2012-13	2	19	Some of the course content is getting cov
IS102	Computer as an	2012-13	2	18	She is very responsible and fair.

Task Definition

Map the students' qualitative feedback in the form of **topics** and **sentiments** towards the three major components namely teaching, content and learning.

INPUT

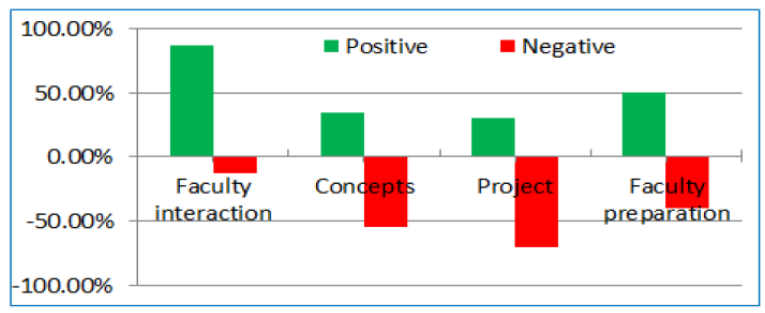
Students' comments

Most of the time ***instructor*** speaks way too fast for students to grasp especially for more difficult concepts towards the end.

Prof is also really patient and understanding and makes it a point to make sure we understood everything.

The ***course project*** is very difficult but very challenging.

OUTPUT

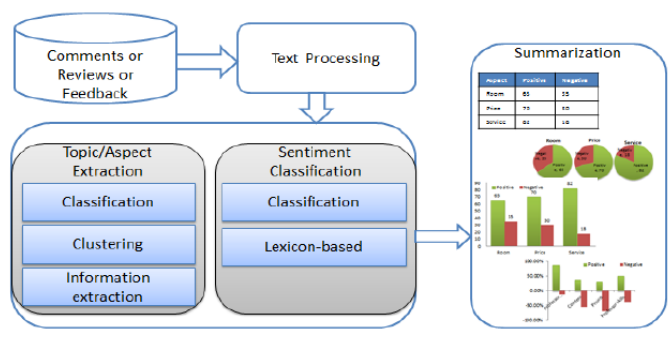


Solution Approach

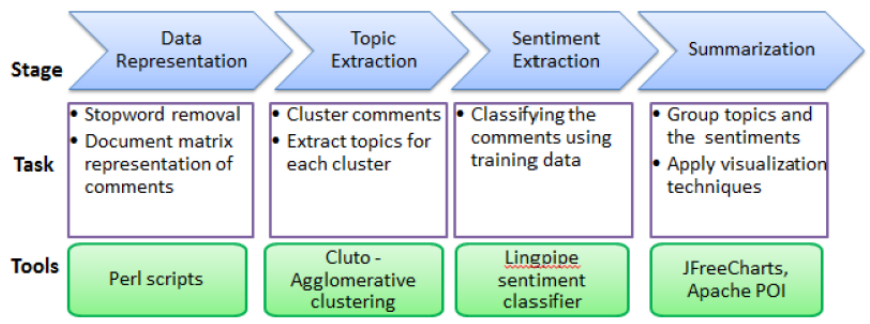
Opinion Mining: Opinion mining architecture takes users' comments as inputs to generate sentiment analysis visualizations as outputs

Tasks in Opinion Mining:

1. Topic Extraction
2. Sentiment Classification
3. Opinion Summarization



Student Feedback Management System



First layer depicts main stages of the system.
Second layer depicts the key tasks in each stage.
Third layer depicts the tools or techniques used to accomplish the tasks in each stage.

SFMS Description

Stage 1: Data Representation. Document Matrix

	Feature	Value	Feature	Value	Feature	Value
1	pace	1.000000	time	1.000000	uploaded	1.000000
2	sometimes	2.000000	require	1.000000	meet	1.000000
3	students	1.000000	sometimes	1.000000	factor	1.000000

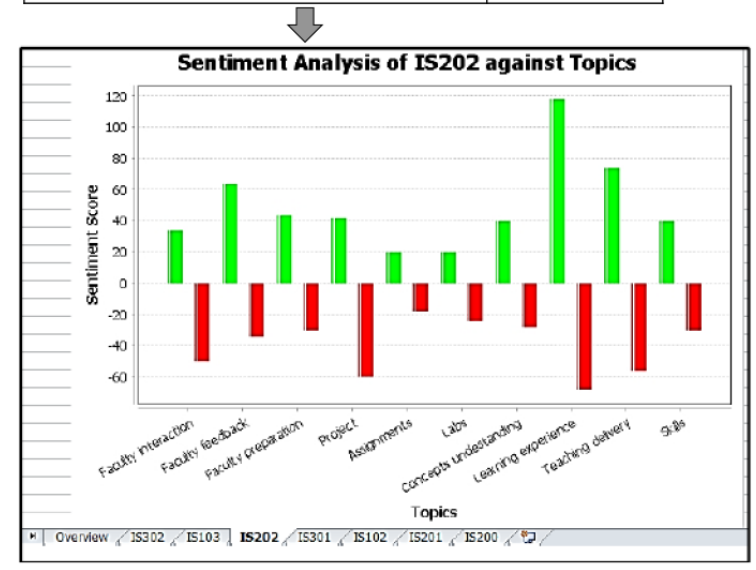
Stage 2: Topic Extraction. Clustering of topics

Cluster #	Top frequency words
0	approachable, friendly, enthusiastic, consultation, help
1	helpful, feedback, concepts, understanding, encouraging, help
2	patient, knowledgeable, passionate, responsible, fun
3	project, heavy, time, requirements, lot

Stage 3: Sentiment Extraction. Log Regression

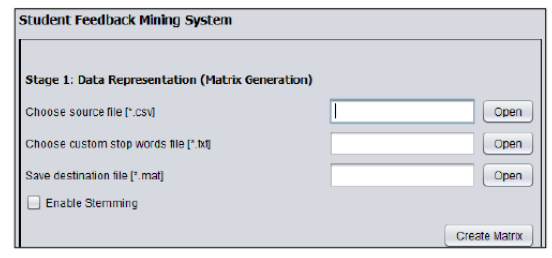
Comments	+ve/-ve
Speaks too fast	-ve
Asks challenging questions	+ve

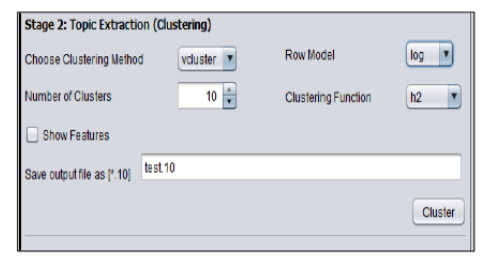
Stage 4: Results summarization. Visual charts



Experiments

User Interface: SFMS is a desktop java application





Topic Extraction:

Findings: H_2 provides 93.4% purity, which is slightly higher than other clustering criterion functions

Cluster Function	Purity	Entropy
i1	0.911	0.214
i2	0.907	0.205
e1	0.921	0.21
h1	0.892	0.228
h2	0.934	0.214

Table: Statistics on human labels

Cluster #	Top frequency words	Alias
0	approachable, friendly, enthusiastic, consultation, help	Interaction
1	helpful, feedback, concepts, understanding, encouraging, help	Feedback
2	patient, knowledgeable, passionate, responsible, fun	Preparation
3	project, heavy, time, requirements, lot	Project
4	time, assignment, sql, labs, php	Assignments
5	challenging, lab , test, project, exercises	Labs

Table: Sample clusters with top words and human alias

Sentiment Extraction:

Findings: Log regression with training data on education domain has high F-score

Function	Precision	Recall	F-Score
Log Regression (Movie domain)	0.656	0.421	0.513
Log Regression (Education domain)	0.801	0.864	0.835
Lexicon (SentiWordnet)	0.815	0.733	0.772

Table: Evaluation of sentiment classification

Comment	IMDB	Education
very knowledgeable, patient and easygoing - sounding a little more upbeat may help with the class's energy level	-ive	+ive
sometime he went through the concepts a bit too fast for us to gasp.	+ive	-ive
always concern for student and willing to help weaker student	-ive	+ive
Asks challenging questions to get us to think deeper.	+ive	-ive

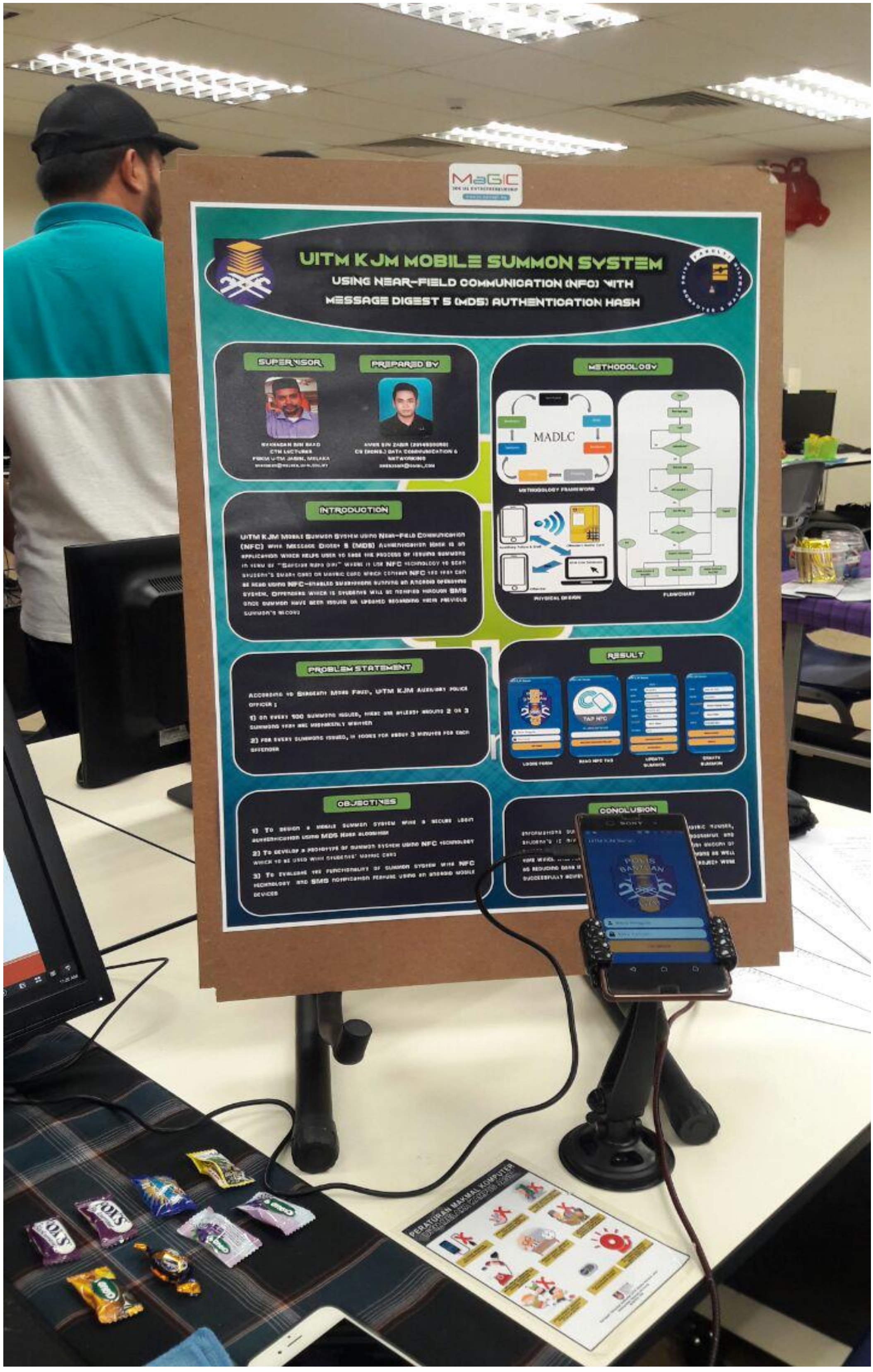
Table: Sample comments and comparison of both domains

Future work:

1. Suggestive comments extraction
2. Correlation analysis between quantitative and qualitative feedback

Reference

1. "Analyzing Educational Comments for Topics and Sentiments: A Text Analytics Approach" Gokran Ila Nitin, Venky Shankararaman and Swapna Gottipati. In proceedings of 45th Annual Frontiers in Education Conference, October 2015.
2. Conceptual Framework of qualitative student feedback, Swapna Gottipati, Venky Shankararaman, 2016 (To appear)


UITM KJM MOBILE SUMMON SYSTEM
USING NEAR-FIELD COMMUNICATION (NFC) WITH
MESSAGE DIGEST 5 (MD5) AUTHENTICATION HASH
SUPERVISOR
PREPARED BY
METHODOLOGY
MADLC
INTRODUCTION
PROBLEM STATEMENT
RESULT
OBJECTIVES
CONCLUSION

Female Reproductive Success Affected by Selective Male Harassment in the Damselfly *Ischnura senegalensis*

Yuma TAKAHASHI and Mamoru WATANABE, University of Tsukuba, JAPAN

INTRODUCTION

Female polymorphism is an evolutinary outcome of sexual conflict, and is thought to be maintained under negative frequency-dependent selection (NFDS).

AIM

To demonstrate NFDS in the femele-dimorphic damselfly, *Ischnura senegalensis*, from the viewpoint of

❶ preferential mating attack, and

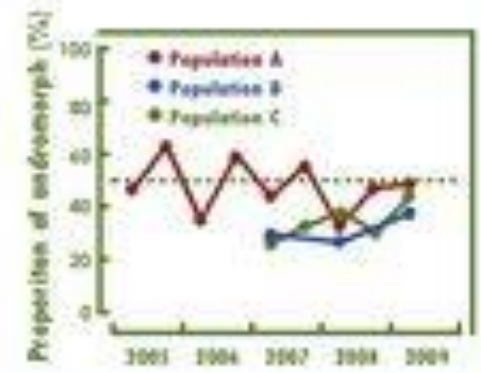
❷ costs of male harassment

DISCUSSION

❶ Males selectively harassed the common morphs in a population.

❷ Reproductive success of rare morphs was larger than that of common morphs.

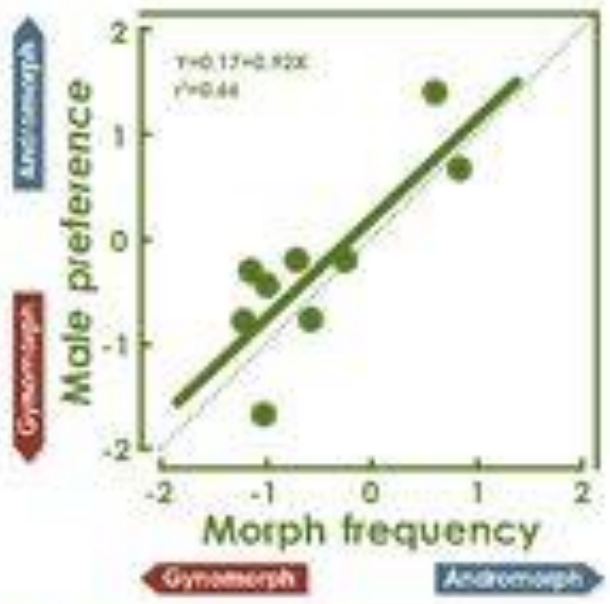
The female dimorphism is maintained under NFDS derived from male harassment.



❶ Preferential Mating Attack

Male mating preference

Binary choice experiment between andromorph and gynomorph was conducted for males by the water in the afternoon, during which diurnal foraging and oviposition activity were occurred.

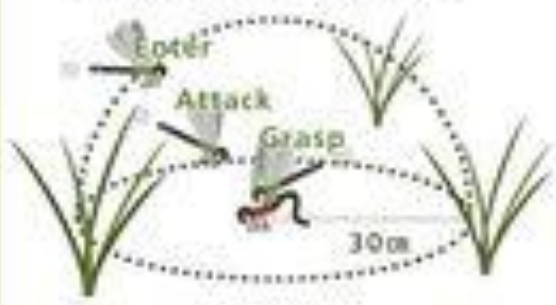


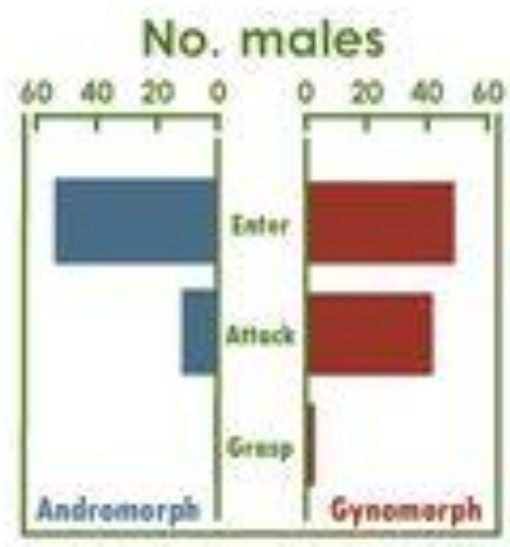
Males preferentially attacked the common female morphs in a population.

Frequency of harassment

In gynomorph-biased populations, mating behavior of males was observed in the afternoon, during which diurnal foraging and oviposition activity of females were occured.

Total observation duration: 174 min for andromorph and 150 min for gynomorph



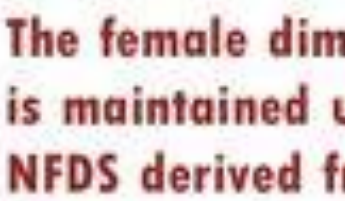


The common morphs were more frequently harassed by males than the rare morphs during daily foraging and oviposition activity.

❷ Costs of Male Harassment

Daily food intake

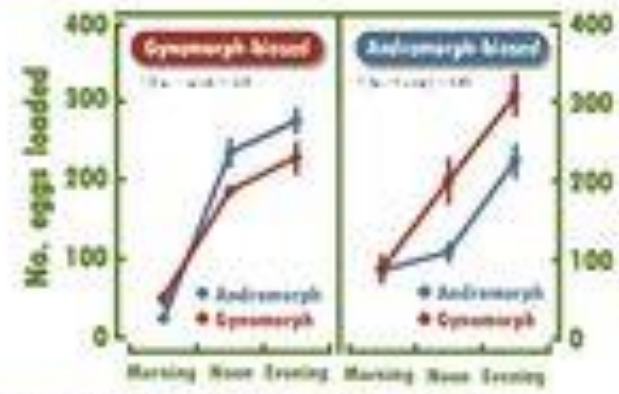
In gynomorph-biased population, females were captured in the evening, which is the end of diurnal foraging activity, and amount of feces excreted was measured as an indicator of food intake.



Amount of food intake in the common morph was less than that in the rare morph

Daily number of eggs developed

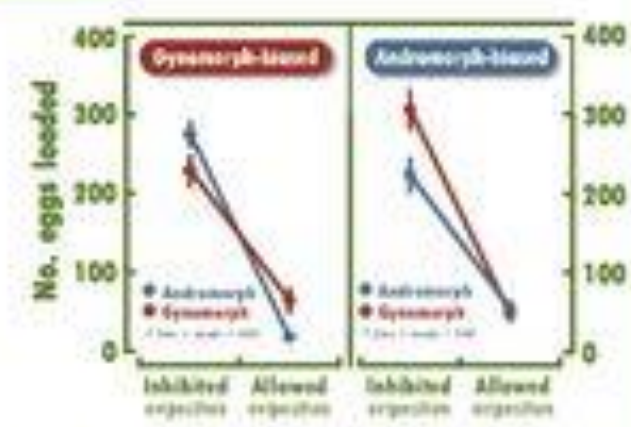
In each local population, females being inhibited their oviposition activity were dissected in the morning, noon or evening, and the number of mature eggs loaded was counted.



The number of mature eggs developed in the common morph was less than that in the rare morph

Daily number of eggs laid

In each local population, the number of mature eggs loaded was compared between females which were inhibited their oviposition and females which oviposited freely in the wild, and the daily number of eggs laid was estimated.



The number of eggs laid in the common morph was less than that in the rare morph