



Men are from Mars , Women are from Venus !

Gender-based feature analysis in Campus-wide
WLANs

Udayan Kumar, Nikhil Yadav, Ahmed Helmy

{ukumar, nyadav, helmy}@cise.ufl.edu, URL: <http://nile.cise.ufl.edu/socnet>

Computer and Information Science and Engineering (CISE) Department,
University Of Florida, Gainesville, FL



Introduction

- Problem Statement:
 1. How can we classify users into groups based on gender, given publicly available traces ?
 2. Can we analyze User behavior and preferences using the above classification ?
- Our study is based on WLAN trace analysis*
- We present a systematic technique to group WLAN users. As a case study we applied it to gender.

* Available through MobiLib <http://nile.cise.ufl.edu/MobiLib>



Information in WLAN traces

MAC (anonymized)	AP associations	Start time	Duration
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Trace we used :

- Number of Users ~4000
- Trace Duration = 30 days

Do not provide :-

- User information like name, gender, major.



Methodology

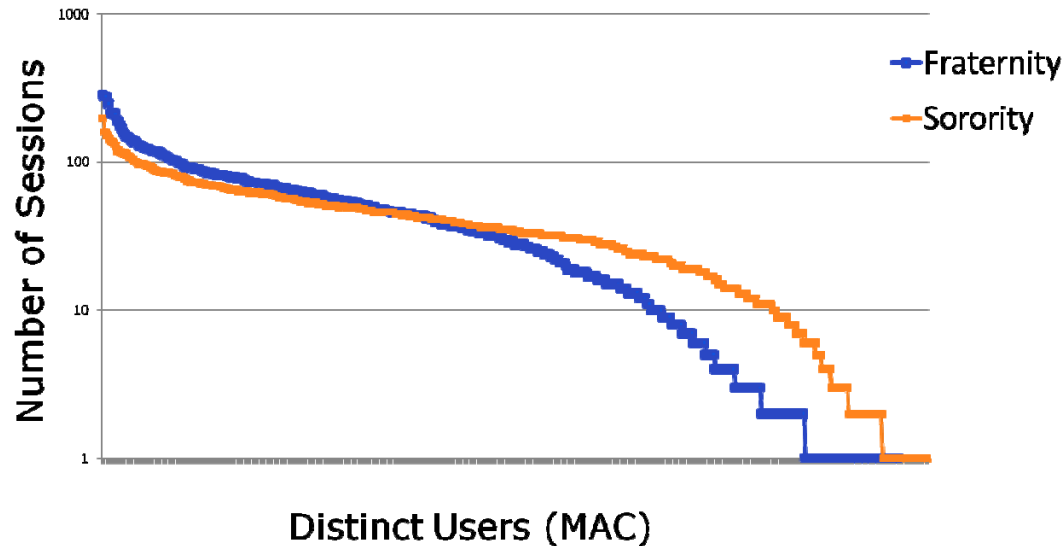


- How can we classify users in groups like major and gender?



Methodology

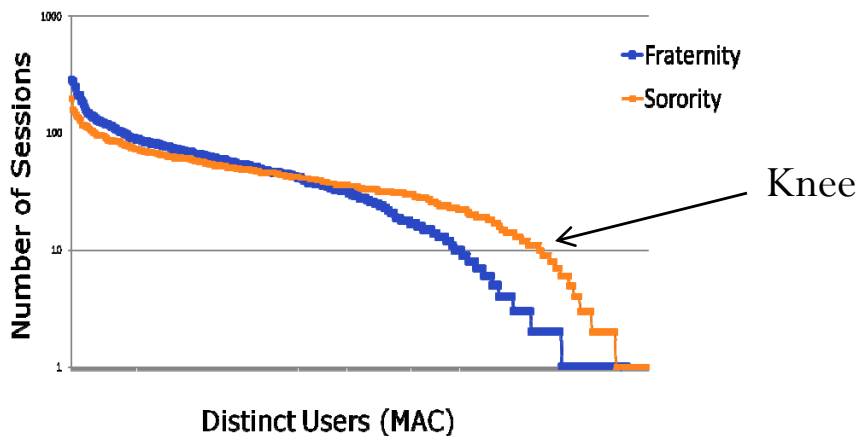
- How can we distinguish visitors from residents?
- Session of visitors would be significantly less than that of regular users.
- Exploiting this fact, we looked at the number of sessions and session duration per MAC





Thresholds

- In this graph the “Knee” bend is a important feature.
- We classify those below the knee as visitors and exclude them from further studies. (order of magnitude difference in sessions)



	No. of Males	No. of Females
No filtering	777	687
After filtering	452	463



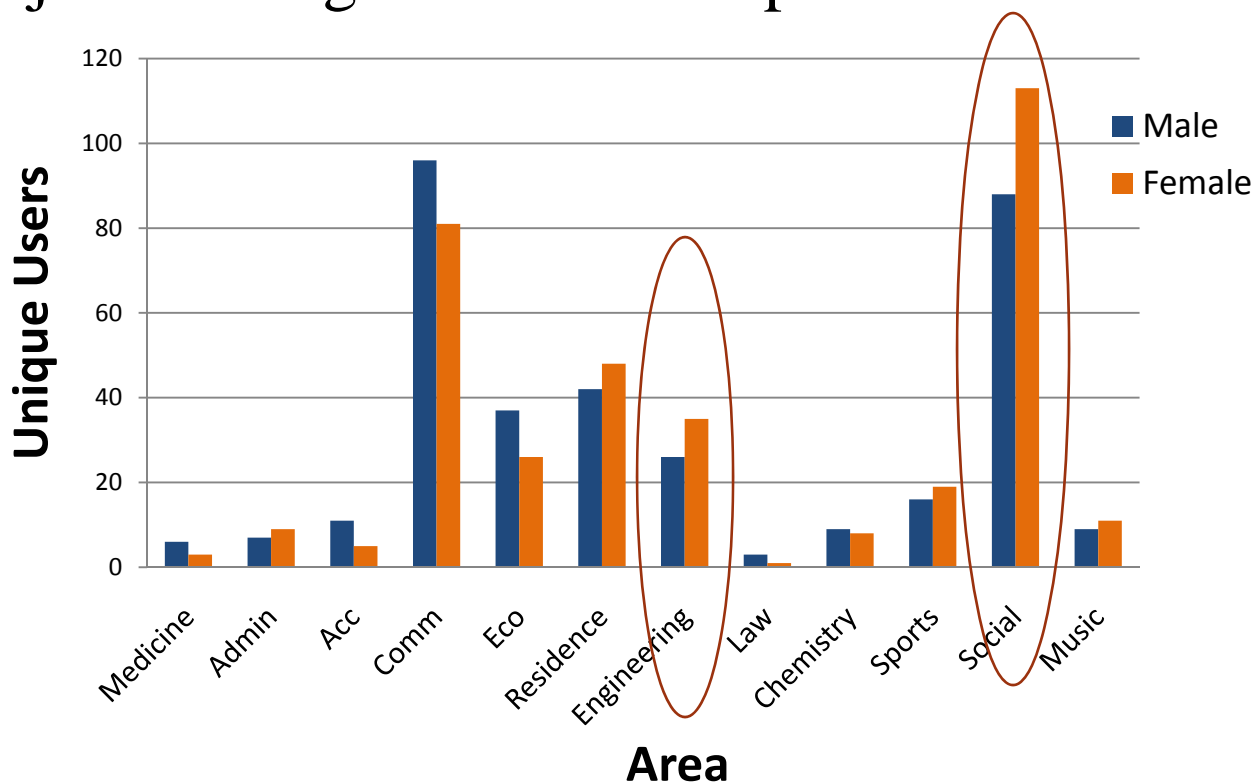
Using this info

- Problem Statement:
 1. How can we classify users into groups based on gender, given publicly available traces ?
 2. Can we analyze User behavior and preferences using the above classification ?
- We analyze the traces with the following metrics
 1. Major (Buildings most frequented)
 2. Online activity (Session duration)
 3. Device preference (Apple or PC 😊)



WLAN Usage and Gender Distribution

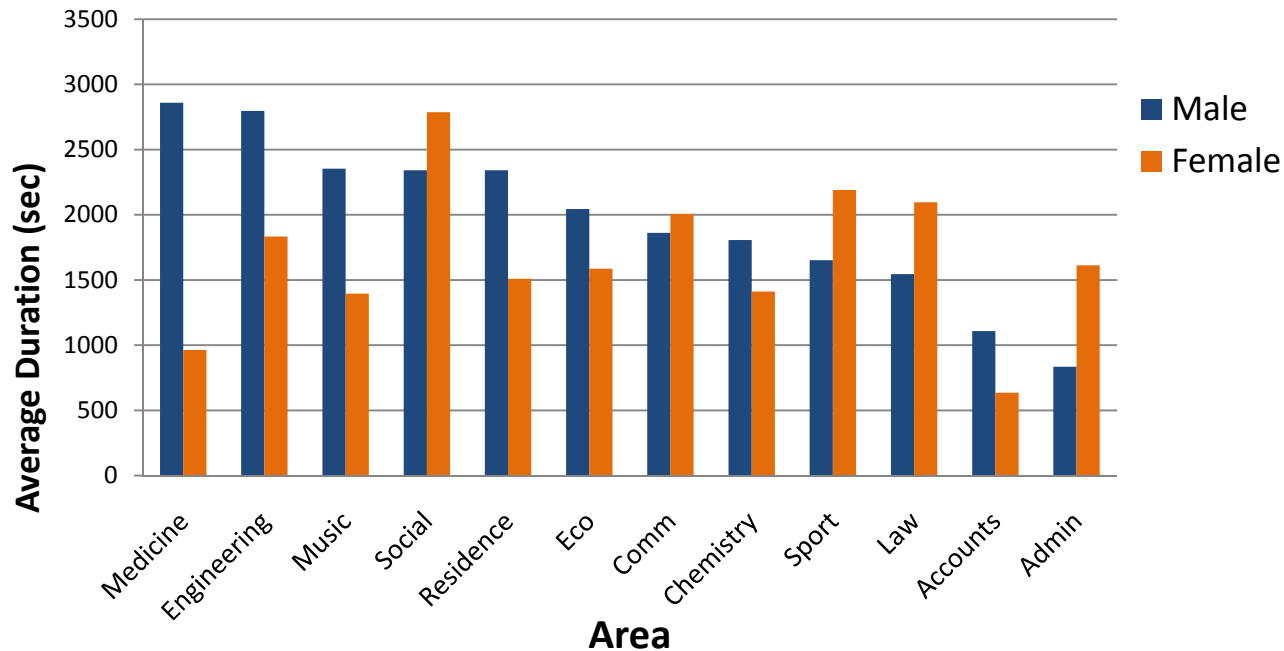
- What are the trends in WLAN usage across different major/buildings areas on campus?





Average session duration

- Are there trends in the average online times of users ?

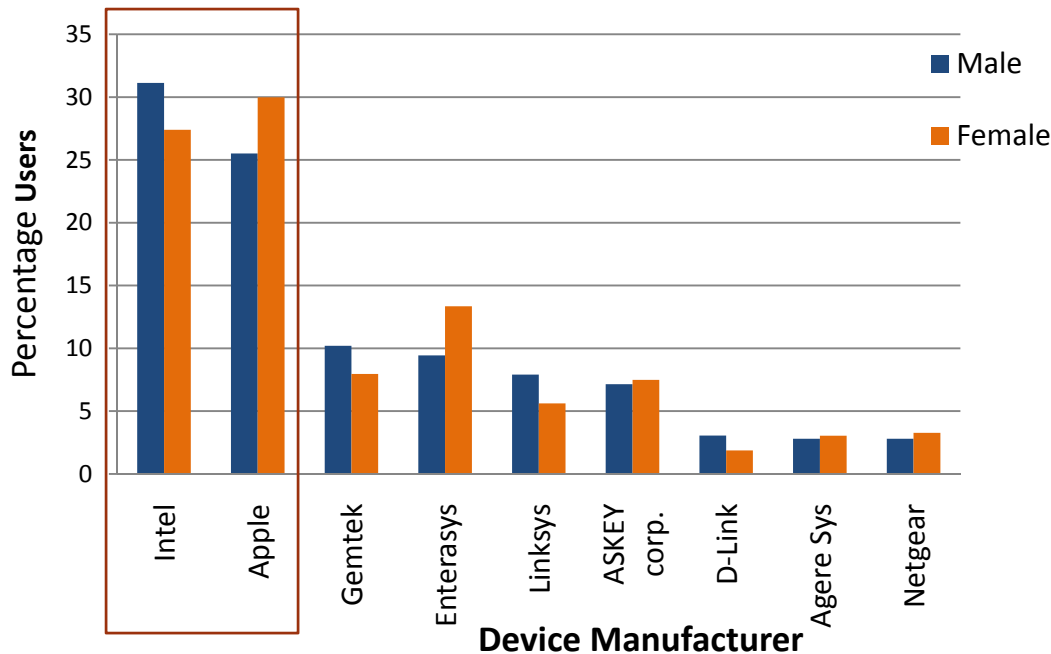


- Males have more online time than female WLAN users.



Preference

- Device preferences: Which device vendors do different genders prefer?



Statistical significance test says with 90% confidence that there is bias within genders for brands/vendors

- Females seem to prefer Apple over Intel



Applications:

What can we do with it ?

- Profiling : identify gender, preference, major for a user
- Social Science: extent of WLAN adoption amongst genders can point out socio-economic and socio-cultural gaps between genders.
- Directed Ads: target announcements can be directed based on the general psyche of males and females. The areas these users frequent more could serve as good places to advertise related interests, services or products.
- Application Customization: Based on vendors different genders prefer.



What now ? (Future Work)

- Further trace analysis
 - New samples from same campus
 - Samples from other campuses
 - Surveys (Are you willing to take one 😊)
- Classify users on other metrics
- Issues
 - Can we know the ground truth?
 - More samples of which we have ground truth
 - What about Privacy?
(research about K Anonymity)

Coming Soon in Theaters near you. !!



Thanks !!

- Questions ??
- URL : <http://nile.cise.ufl.edu/socnet/>
: <http://nile.cise.ufl.edu/MobiLib/>
- Contact us:
 - Udayan Kumar(ukumar@cise.ufl.edu)
 - Nikhil Yadav(nyadav@cise.ufl.edu)
 - Prof. Ahmed Helmy (helmy@cise.ufl.edu)