

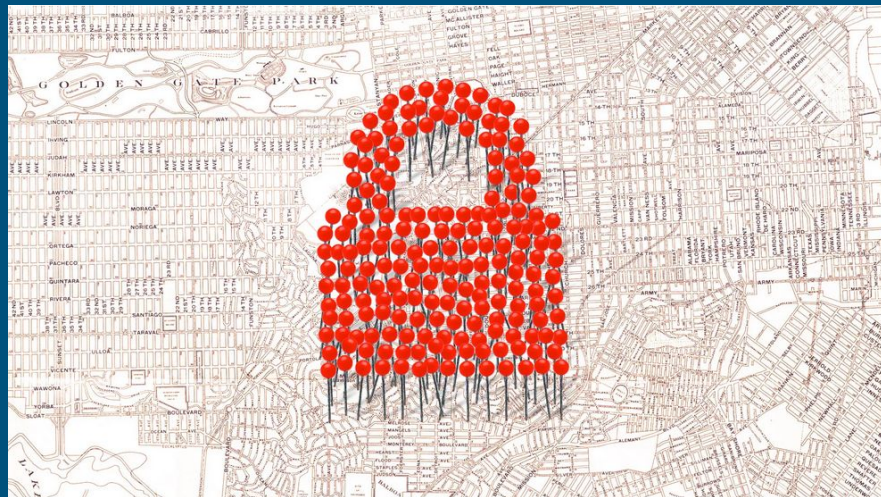
Location Privacy

CS475 - Data Privacy

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Problem Statement

- What is Data Privacy?
- What is Location Privacy?
- Why do we need it?



Motivation & Background

- The growing demand in location data
- Lack of transparency in location data market
- People are not aware that they are under surveillance



Related Work

OneTrust

- Comply with CCPA, GDPR, LGPD
- AI & Robotic Automation [2]

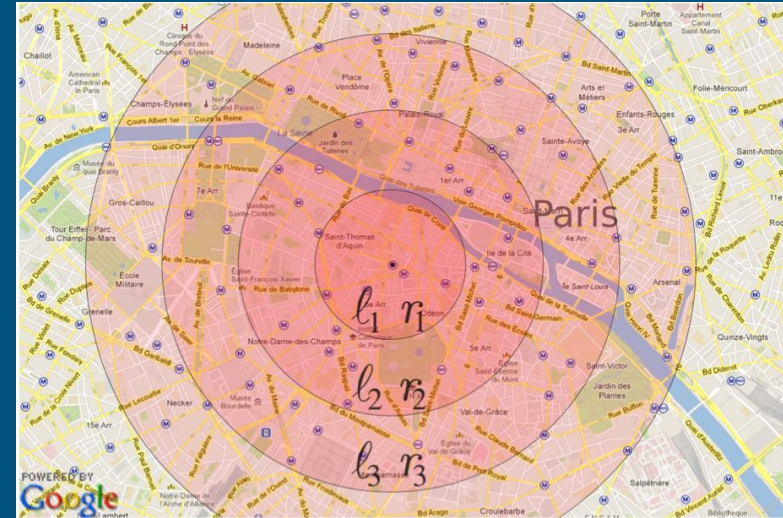
Privacy Protection For Users Of Location-Based Services

- Policy-Based Schemes
- Trusted Anonymization Server-Based Schemes
- Mobile Device-Based Schemes [3]



Goal Of The Project

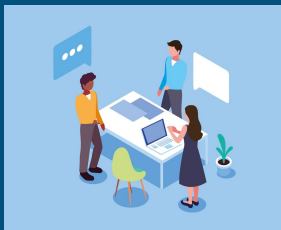
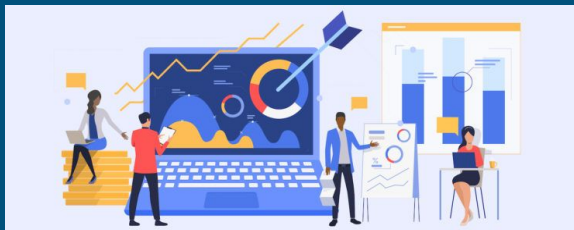
- Process Raw Dataset
- Provide Information About Potential Customers
- Ensure Location Privacy



[1]

Progress So Far

- Literature Review
- Deciding Project
- Searching Datasets
- Distribution of tasks

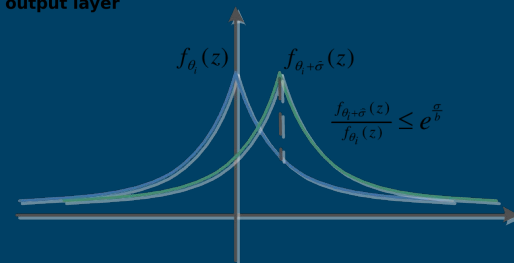
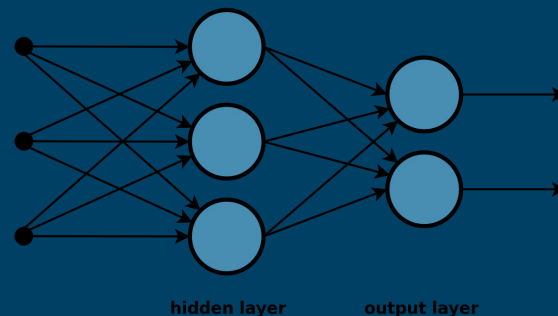


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2		00544		-73,049288		40,813223
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4		00602		-67,186553		18,383005
5		00603		-67,151954		18,433236
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7		00605		-67,151346		18,436149
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17		00623		-67,151780		18,086721
18		00624		-66,723612		18,063481

Next Steps

1. K-Anonymity & Noise Comparison:

- Feed-Forward Neural Network
- Categorization (ZIP Code)
- Differential Privacy via Laplace Noise
- K-Anonymity
- Comparison: Un-anonymized & Differential Privacy & K-Anonymity accuracy. (FFNN) [4]



Algorithm	Accuracy(%)
FFNN	97.1
FFNN + Laplace Noise	94.2
FFNN + K-anonymity	93.3

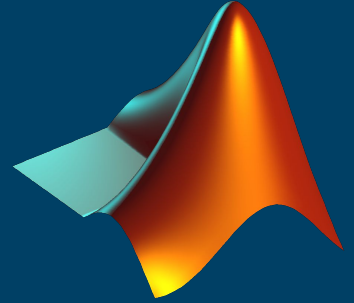
Next Steps

2. Programming Language:

Python or Matlab [5]

3. Database (Storage):

MySQL (Local Storage)



Next Steps

4. New Datasets:

- <https://data.world/>
- <https://www.kaggle.com/datasets>
- <https://datarade.ai/data-categories/address-data>



data.world

kaggle™



Datarade

References

- [1] Andrés, Miguel E., Nicolás E. Bordenabe, Konstantinos Chatzikokolakis, and Catuscia Palamidessi. "Geo-indistinguishability: Differential privacy for location-based systems." In Proceedings of the 2013 ACM SIGSAC conference on Computer & communications security, pp. 901-914. 2013.
- [2] OneTrust. (2021, October 26). *Privacy management*. OneTrust. Retrieved November 8, 2021, from <https://www.onetrust.com/solutions/privacy-management/>.
- [3] IEEE Xplore temporarily unavailable. (n.d.). Retrieved November 8, 2021, from <https://ieeexplore.ieee.org/abstract/document/6155874>.
- [4] Dantas, J. (2021, August 16). Differential privacy and K-anonymity for machine learning. Medium. Retrieved November 8, 2021, from <https://towardsdatascience.com/differential-privacy-and-k-anonymity-for-machine-learning-fbb416f32b6>.
- [5] The 10 best data science programming languages to learn in 2021. Flatiron School. (n.d.). Retrieved November 8, 2021, from <https://flatironschool.com/blog/data-science-programming-languages>.

Thank you all for listening...