SwiftAuth: Use of a Fuzzy System for Simple, Secure and Faster alternative to authenticate access to web applications

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Problem Statement

- SwiftAuth: Use of a Fuzzy System for Simple, Secure and Faster alternative to authenticate access to web applications:
- SwiftAuth uses a combination of facial and vocal recognition to authenticate users quickly and seamlessly on all the web apps that they love.
- Our goal is to focus on utilizing biometrics to not only make user authentication technically more secure, but also faster and seamless from a social and psychological perspective.
- A lot of malicious hacking is done through social flaws, and we want to address that by making a product that makes the client's experience as easy as possible without letting go of security.
- Users of SwiftAuth can login without touching a keypad, and without having to memorize a password.

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Literature Survey

- **RESEARCH PAPERS:-**
- **Enhanced Password Authentication through Fuzzy Logic** By Willem G. de Ru and Jan H.P. Eloff Rand Afrikaans University. **IEEE Expert.**
- **Privacy-Protected Facial Biometric Verification Using Fuzzy Forest Learning**By Richard Jiang, Ahmed Bouridane, Senior Member, IEEE. **IEEE TRANSACTIONS ON FUZZY SYSTEMS, VOL. 24, NO. 4, AUGUST 2016.**
- **Implementation of Fuzzy Logic in Biometric System** By Puja S Prasad1 , Prof G N Purohit2 Dr Saurabh Mukherjee **Imperial Journal of Interdisciplinary Research (IJIR).**
- **A Survey on Biometrics based Key Authentication using Neural Network** By P.M.Gomathi, Dr.G.M. Nasira. **Global Journal of Computer Science and Technology.**

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Literature Survey (cont'd.)

- **How the idea is involved?**
  The need to remember your login details(id, password) everytime you are trying to access a web application, which is a cumbersome process. Hence we thought of using an authentication technique using Bio-metrics to make login process faster, secure and simple. Everytime we forget our lo-gin details to any of our online accounts, we have to go through a long and tedious process to retain our details back. This is not only time consuming but it also requires the user to remember a lot of details. Keeping this problem in mind, we developed an idea called "SwiftAuth".

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Proposed Approach

- If you are not signed into a website, we immediately draw up a small pop up window that fires the web-cam and also a mic that records the user voice.
- These two factors are used to validate user authentication under some seconds.
- This process is very fast as compared to the time it takes to type in one's password.
- Using a browser extension, we input user's face and voice data using web-cam and microphone respectively.
- Once entered, the data will be used as an input to fuzzy system. This input along with the other input i.e. the data already stored in database is sent to Fuzzy System, which generates a single value based on the clarity of input.

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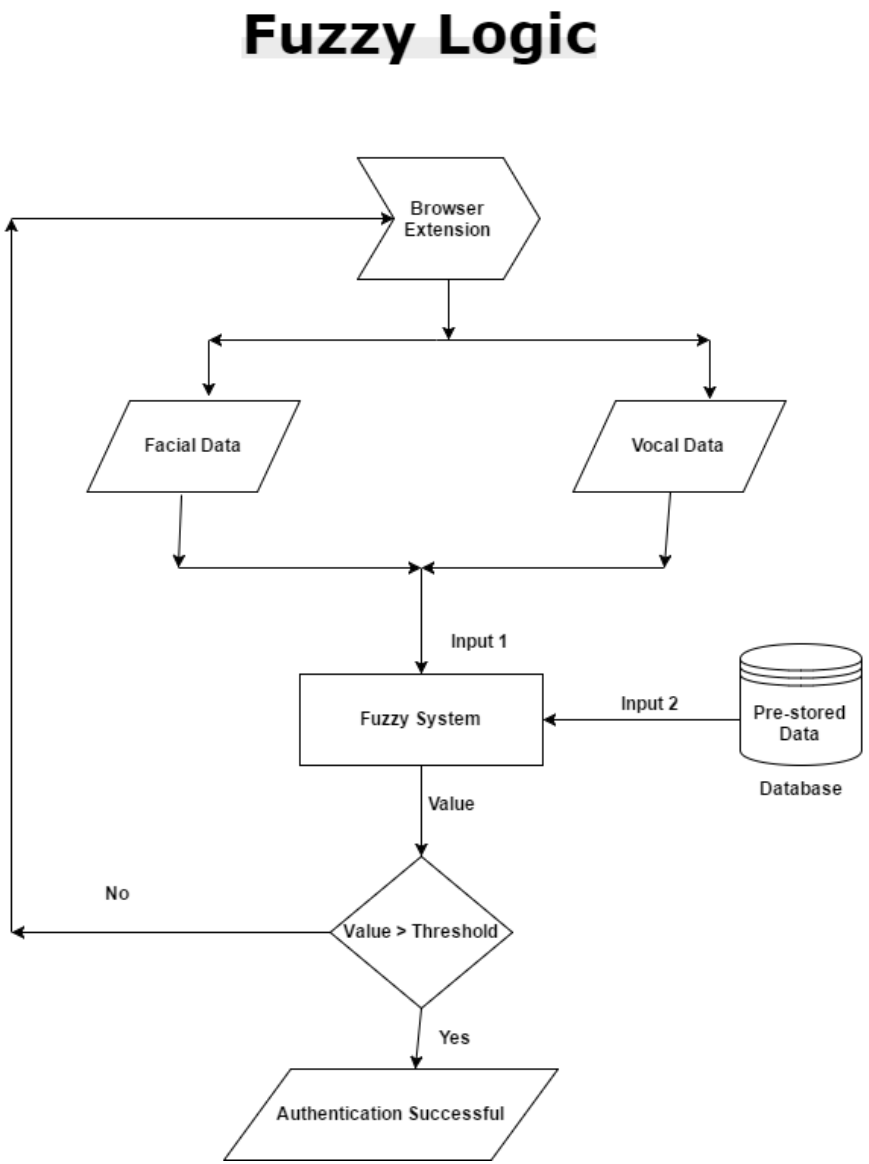
Proposed Approach (cont'd.)



Proposed Approach (cont'd.)

- Fuzzy Logic is widely used to solve problems concerning human-related sciences.
- Biometrics is one such attractive application, which requires feature extraction and matching tasks. Fuzzy logic has been successfully applied to many biometric matching systems such as face recognition, fingerprint recognition and so on in which fuzzy logic achieved higher robustness, adaptively.
- We accept facial details of user from web-cam as one input. Later we extract vocal data of the user using microphone. Then we make the fuzzy if-then rules for the feature of any registered person.
- In this, parameters in fuzzy membership functions are statistically determined in the learning process. We calculate a fuzzy degree of facial and voice data for a registered person, and identify and verify the user by the degree.

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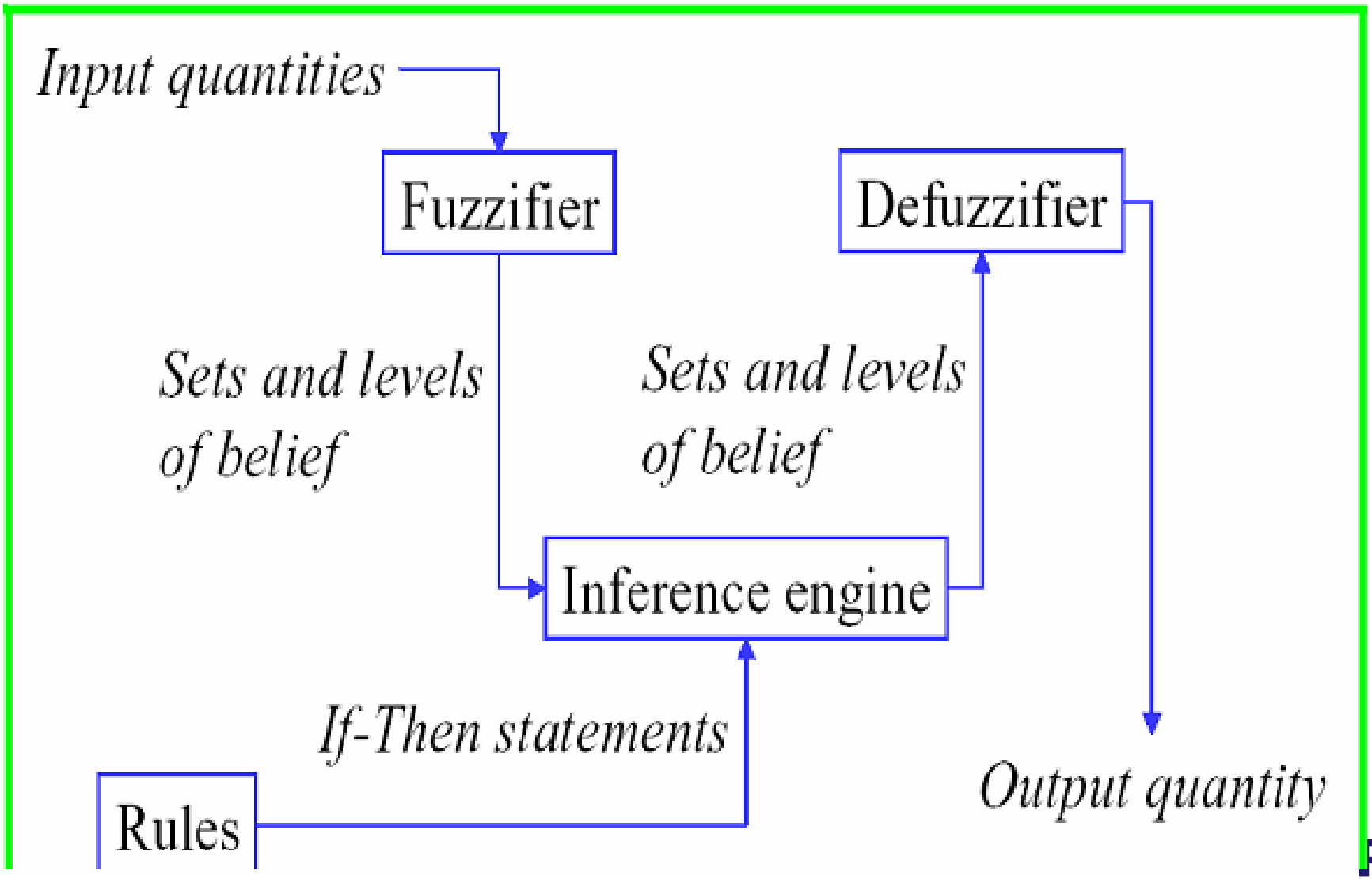
Fuzzy System



Data Acquisition

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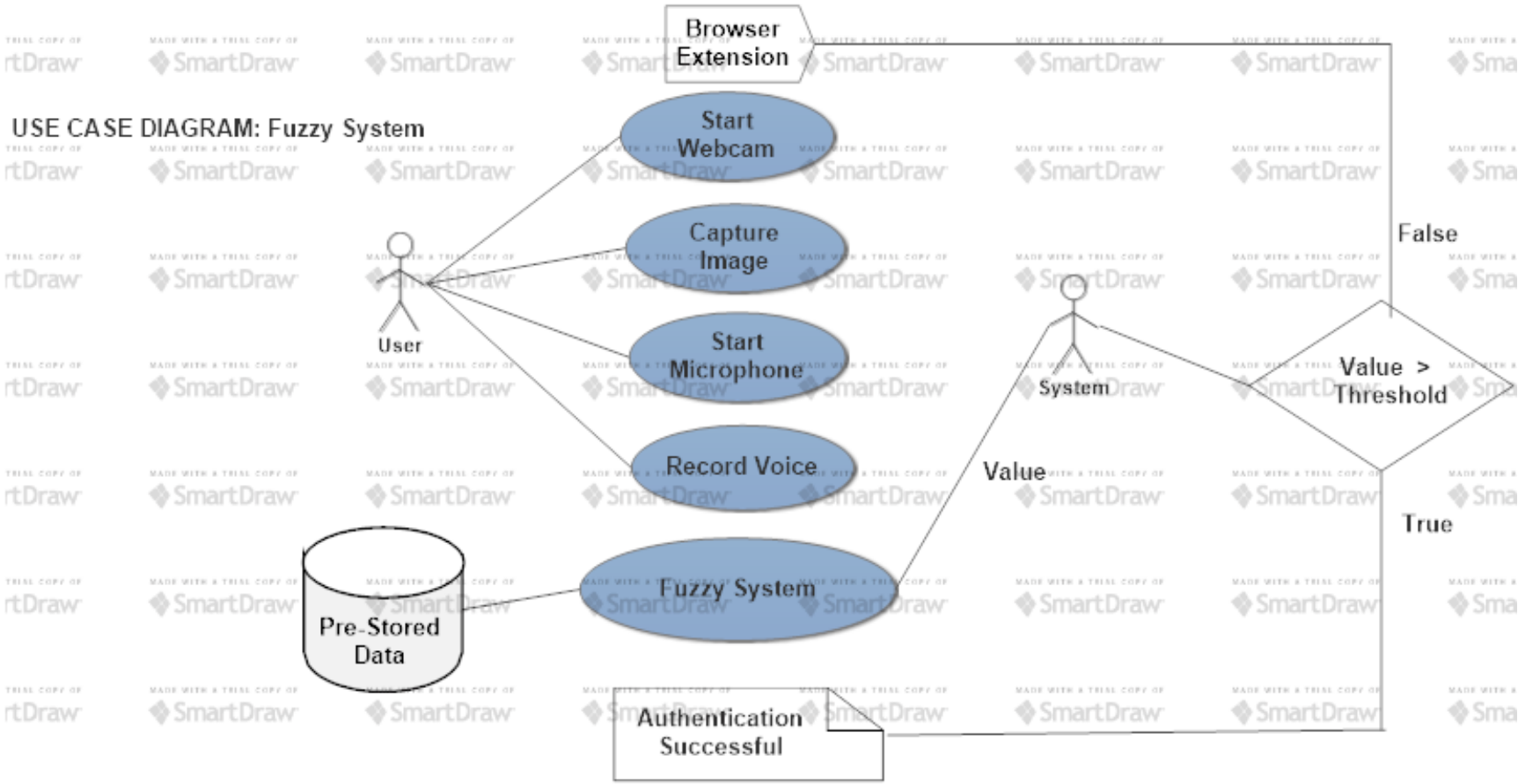

Expected Results

- Using a combination of facial and vocal recognition to authenticate users quickly and seamlessly on all web apps and eliminate the need to type password.