**Paper 6 :** Xiaomei Zhang, Pengming Zhang, Haomin Hu, "Multimodal Continuous User Authentication on Mobile Devices via Interaction Patterns", *Wireless Communications and Mobile Computing*, vol. 2021, Article D 5677978, 15 pages, 2021. https://doi.org/10.1155/2021/5677978

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| **Model Name** | Multimodal continuous user authentication on mobile devices via Interaction patterns |
| **Framework** | Classification algorithms for authentication - K-nearest neighbor (KNN), support vector machine (SVM), and random forest (RF) |
| **Issue addressed** | The work achieves better classification results on collected dataset. Best performance of fusion features is obtained. |
| **Limitations** | The dataset is small and insufficient to support the training of an authentication network with strong generalization capability |

**Paper 7 :** Aws Saood Mohamed Al-Dori , Jamal Mohamed Kadhim, “Touchscreen-based Smartphone Continuous Authentication System (SCAS) using Deep Neural Network ”, Turkish Journal of Computer and Mathematics Education Vol.12No.11 (2021), 2382-2391

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| **Model Name** | Touchscreen-based Smartphone Continuous Authentication System (SCAS) using Deep Neural Network |
| **Framework** | Classification algorithms for authentication - Deep neural network(DNN) |
| **Issue addressed** | He deep neural network algorithm implemented directly on this dataset without extracting new features from it except the preprocessing phase of the dataset |
| **Limitations** | Similar tiuch pattern as suggested in this paper gets mis-classified data |

**Paper 8 :** Kiyani, Anum & Lasebae, A. & Ali, Kamran. (2020). Continuous User Authentication Based on Deep Neural Networks. 1-4. 10.1109/UCET51115.2020.9205446.

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| **Model Name** | Continuous user authentication based on Deep Neural networks |
| **Framework** | Classification algorithms for authentication - LSTM network |
| **Issue addressed** | The proposed system analysis the keystrokes behaviour of each user to uniquely identify it. |
| **Limitations** | ﬁrst approach, only using the LSTM  per frame, imposter users could not be caught up even after  performing 28% of actions  ﬁrst approach, only using the LSTM  per frame, imposter users could not be caught up even after  performing 28% of actions  ﬁrst approach, only using the LSTM  per frame, imposter users could not be caught up even after  performing 28% of actions  In the first approach, imposter user could not be caught up even after 28% of actions. |