CURRICULAM VITAE

Dr. Pankaj Dhiman

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OBJECTIVE

Looking for a challenging opportunity in an organization providing good working environment along with suitable opportunity for professional development, where I can be the key team member, making meaningful contribution in the growth and success of organization by delivering results using my skills.

ACADEMIA

- Ph.D in Computer Science & Engineering (2017-2021) from **National Institute of Technology (NIT)** Hamirpur, Himachal Pradesh.

- M.Tech in Computer Science & Engineering (2013-2015) from **National Institute of Technology (NIT)** Hamirpur, Himachal Pradesh.

- B.Tech in Computer Science & Engineering (2008-2012) from Himachal Pradesh University.

- Class XII (CBSE Board) from DAV Public school, Hamirpur (H.P).

- Class X (CBSE. Board) from DAV Public school, Hamirpur (H.P).

AREA OF INTEREST

- Cryptography and Secure Communication Protocol.
- Networking
- Internet of Things (IoT)

TECHNICAL INTEREST

- Matlab,
- AVISPA Validation Tool
- C, C++, NS-3
- Latex

ORGANIZATIONAL EXPOSURE / ACADEMIC PROJECTS

TRAINING:

- **Title:** Completed Industrial/Vocational Training in Jet successfully.
  Duration: 2 months **Year:** 2011
- **Title:** Completed Training on "Programming in C++" from CoMTECH Hamirpur (HP).
  Duration: 1 months **Year:** 2010
- **Title:** Completed Training on "Programming in C" from CoMTECH Hamirpur (HP).
  Duration: 1 months **Year:** 2009

TOP ACHIEVEMENTS:

- Graduate Aptitude Test in Engineering (GATE) Qualify 2012
- MHRD Scholarship for Teaching Assistantship (M.Tech) 2013-2015
- MHRD Scholarship for PhD (2017-2021)

M.TECH THESIS

- **Topic: Distributed Recovery in Moveable Wireless Sensor Networks.**
  Description: In wireless sensor network (WsN) nodes relay data, which maintains consistency in the sensor network. If cut vertex nodes failed it leads to partitioning in network, which disrupts the communication. It requires an autonomous technique that finds the fail node and provides recovery to them. The proposed approach provides recovery from network partitioning in distribute WsN.

Ph.D THESIS WORK

- **Topic: Enhancing Privacy and Security of Robust IoT Network**: The growth of connected IoT devices will be estimated to be 40 billion by the year 2025. IoT devices will also generate an enormous amount of data. This impact indicates that there will be more connected IoT devices in the near future as compared to the available address inside IPv4 addresses. However, the IoT network also establishes an open attack surface for the attackers

over the insecure wireless environment. Attackers can also affect data generated from smart home devices by selling the individual's data. So the second objective highlights the addressing and identification issue for the IoT network on the basis of the above study. The proposed unique secure addressing and identification (SAI) scheme modifies the standard IPv6 format that securely authenticates the user and home appliances at the server. It also provides an algorithm for filtering incoming packets based on the identity of the device. The SAI scheme able to provides more security with no additional overhead and behaves same to the existing standard IPv6 format. The Second objective introduces a secure session key based mutual authentication (SSKUAI) the scheme by using the Diffie-Hellman (DH) key exchange protocol. Informal security verification of this scheme also proved in this work. Formal security analysis is carried out by the Real-or-Random (ROR) model and AVISPA Tool. The analysis of the proposed SSKUAI scheme proves that this scheme is safe against various possible attacks, e.g., device compromise attack, password guessing, man-in-the-middle attack, replay attack, and the masquerade attack. The last objective of the thesis considers the smart-card secure addressing and authentication (SCSAA) scheme. The proposed scheme uses the modified standard IPv6 protocol to mitigate the security threats in the IoT network. This scheme provides a unique way of addressing by assigning unique 64-bit interface identifier (IID) to smart devices/appliances. It uniquely authenticates smart devices/ appliances in the IoT network.

PAPER PUBLICATIONS

SCI/SCIE JOURNAL PAPERS:

- **Pankaj Kumar** and Lokesh Chouhan, 'A Small World Phenomenon Based Greedy Model for IoT Network**,"Journal of Adhoc and Sensor Wireless Network**, pp. 1-30, Sep 2020**.
  .   [SCI/SCIE, Impact Factor: 0.948]**

- **Pankaj Kumar** and Lokesh Chouhan 'Design of Secure Session Key Using Unique Addressing And Identification Scheme for IoT Network,"**Transactions on Emerging Telecommunications Technologies (Wiley Online Library),** vol. e3993, pp. 1-21, May 2020.   **[SCI/SCIE, Impact Factor: 1.594]**

- **Pankaj Kumar** and Lokesh Chouhan, "A Secure Authentication Scheme for IoT Application in Smart Home," **Peer-to-Peer Networking and Applications (Springer),** pp. 1-19, July 2020.   **[SCI/SCIE, Impact Factor: 2.793]**

- **Pankaj Kumar** and Lokesh Chouhan, A Privacy and Session Key Based Authentication Scheme for Medical IoT Networks**," Computer Communications (Elsevier),** pp. 1-38, Nov 2020.   **[SCI/SCIE, Impact Factor: 3.167]**

- **Pankaj Dhiman**, Sumit Badotra, Karan Agarwal and Celestine Iwendi, "A Secure Authentication Scheme for Industrial IoT." **Soft Computing (Springer).**
  [SCI/SCIE, Impact Factor: 3.643]   **(Under Revision Since Aug, 2022)**

Non SCI JOURNAL PAPERS:

- Ankit Songara, **Pankaj Dhiman**, and Sumit Badotra,"Scalable IoT and Cloud based Architecture for Covid -19 detection" International Journal of Distributed Systems and Technologies (IJDST) [Scopus Indexed**]**   **(Under Revision Since Aug, 2022)**
- Shiv Kumar, **Pankaj Dhiman**, 'Distributed Clustering Protocol for Wireless Sensor Network," Imperial journal of interdisciplinary research, pp. 1-25, April 2016
- Rishav Saxena, Arbaz Khan, Kanhaiya Sharma, and **Pankaj Dhiman**, 'E-commerce website of "Woclient," Journal of Emerging Technologies and Innovative Research, pp. 1-25, April 2021.   **[Impact Factor: 7.5]**
- Rishav Saxena, Arbaz Khan, Kanhaiya Sharma, and **Pankaj Dhiman**, 'Face Identification in The Era of Covid-19," Journal of Emerging Technologies and Innovative Research, pp. 18-30, May 2021**.**   **[Impact Factor: 7.5]**

CONFERENCE PAPERS:

- Sidhant Gupta, Sejal Gupta, Nitin Gupta, **Pankaj Dhiman**, "Delay Tolerant and Prioritized Batch Verification System Using Efficient RSU Scheduling in VANET," **in IEEE International Conference on Communications (ICC-2022).**
- **Pankaj Kumar** and Lokesh Chouhan, "A Survey of Privacy and Security Issues in Internet of Things (IoT)," in 2019 International Conference on Advancement in Engineering Sciences. 2019, pp. 373-376.
- **Pankaj Kumar** and Lokesh Chouhan, "Distributed Recovery in Moveable Internet of things (IOT) Networks," in 2018 First International Conference on Secure Computing and Communication (ICSCCC). IEEE, 2018, pp. 1-8.
- **Pankaj Kumar** and Lokesh Chouhan, "A Survey on Internet of Things (IoT) based Smart City and Roadside Smart System," in International Conference on Emerging Trends in Engineering Innovations and Technology Management (ICETEITM 2017). 2017.

Book Chapters:

- A. Songara, **Pankaj. Kumar** and L. Chouhan, "Block chain security for wireless multimedia networks," in Handbook of Cryptographic and Information Security Approaches for Images and Videos. CRC Press, 1-28, 2017.

- **Pankaj. Kumar,** A. Songara, and L. Chouhan, "Cloud and IoT powered smart connected cities," in Handbook of Research on Big Data Analytics for smart and Connected cities. IGI, 1-30, 2017.

- Ankit Songara**, Pankaj Dhiman** and Sumit Badotra, "Application of Machine Learning in IOHT," in Handbook of mart and Secure Internet of Healthcare Things. CRC Press (Taylor & Francis), 1-25, Jan 2022.

WORKSHOPS ORGANIZED/ATTENDED

WORKSHOPS ORGANIZED:

- **Growing Role of Machine Learning in Cyber-Security.**

  Two week Workshop (between 13-24th, June, 2022) organized at Jaypee University, Wakhnaghat, Solan (HP),

- **Cyber Security Awareness Webinar.**

  Ministry of Home Affairs is implementing a scheme called Indian Cyber Crime to deal with cyber crimes in a coordinated and comprehensive manner. Jaypee University is organizing webinars from Jan, 2022 to December, 2022. We have already organized 8-webinars Under the Cyber Jaagrookta Diwas initiative of UGC (Ministry of Education, Govt of India).

WORKSHOPS ATTENDED:

- **Data Analytics and its Research Perspectives.**
  One week Workshop (between 06-11th, June, 2022) organized at Jaypee University, Wakhnaghat, Solan (HP).

- **AI AND Machine Learning.**
  One week short term course organized by Electronics and ICT Academies through NKN under Scheme of financial assistance for setting up of Electronics and ICT Academies, 04-08 June, 2018 at NIT Hamirpur.

- **Security Trends in Mobile Adhoc & Sensor Systems.**

  One week short term course organized under ISEA Project Phase-II, MeitY, GoI, 15-20 March, 2018.