

JUDUL: PERANCANGAN DAN IMPLEMENTASI SISTEM PRESENSI  
WIRELESS BERBASIS ESP32 DI FAKULTAS TEKNIK UNIVERSITAS  
SURABAYA

Nama: Leonardo Onggo.

Jurusan: Teknik Elektro.

Pembimbing 1: Susilo Wibowo, S.T., M.Eng.

Pembimbing 2: Rafina Destiarti Ainul, S.ST., MT.

**ABSTRAK**

Dari masa ke masa, teknologi menjadi semakin penting dalam kehidupan sehari-hari. Pengaruh teknologi ini juga dapat dilihat pada banyak hal di Fakultas Teknik Universitas Surabaya, contohnya pada sistem presensi mahasiswa. Beberapa tahun terakhir, Fakultas Teknik Universitas Surabaya menggunakan sistem presensi digital dengan menggunakan perangkat bernama "SiKarel". Sistem yang ada memang sudah sangat praktis, aman, dan juga maju dalam hal teknologi dibandingkan dengan sistem tradisional yang menggunakan kertas. Namun seiring perkembangan zaman, sistem ini juga semakin tua dan menjadi kurang relevan. Sistem yang ada sudah tidak dapat memenuhi kebutuhan dari pengguna. Penulis mengamati timbulnya masalah dari sistem yang sudah ada khususnya dalam kondisi sekarang yang ada pada era pandemi COVID-19 ini, yaitu banyaknya kontak fisik antara mahasiswa selama proses presensi. Selain itu terdapat beberapa hal juga yang menjadi kelemahan dari sistem yang ada, seperti proses presensi juga memakan banyak waktu dan menghambat laju kelas, kualitas *chip* RFID pada kartu mahasiswa yang sering rusak dan tidak terbaca, serta masih banyak lagi. Atas dasar ini, penulis ingin mengembangkan sistem baru dengan menggunakan teknologi *wireless* berbasis ESP32. Sistem yang diusulkan penulis terdiri dari 5 komponen utama, yaitu *server*, *access point*, ESP32 *master*, ESP32 *slave*, dan *client*. Dari hasil uji coba, sistem presensi *wireless* baru ini memungkinkan mahasiswa untuk melakukan presensi tanpa kontak fisik. Sistem juga menunjukkan tingkat akurasi presensi 100% dengan waktu rata-rata verifikasi presensi masing-masing mahasiswa ada dibawah 1 detik dan kecepatan transmisi data rata-rata 700-800 B/s.

**Kata kunci:** *Wireless*, sistem presensi, presensi digital, teknologi.

*TITLE : DESIGN AND IMPLEMENTATION OF ESP32-BASED WIRELESS  
ATTENDANCE RECORDING SYSTEM IN THE FACULTY OF ENGINEERING  
UNIVERSITY OF SURABAYA*

*Name: Leonardo Onggo.*

*Discipline: Electrical Engineering.*

*First advisor: Susilo Wibowo, S.T., M.Eng.*

*Second advisor: Rafina Destiarti Ainul, S.ST., MT.*

**ABSTRACT**

*From time to time, technology has become an essential thing in our life. The influence of technology also can be seen in various things from the Faculty of Engineering University of Surabaya, for example the attendance recording system. As we all have known, for these past years, Faculty of Engineering University of Surabaya has been using digital attendance recording system utilizing a device called "SiKarel". We can't argue that the current system is very practical, secured, and also more advanced compared to traditional attendance recording system using paper. However, as the years went by, this system also gets old and outdated. The system can no longer provide needs of the users. According to the author's observation, there is one main problem occurred when the system faced to current situation in the era of COVID-19, that is too much physical contact during the attendance recording process between students. Besides, there are also several problems that caused by the system, such as attendance recording took a lot of time and can disturb class conduciveness, the quality of RFID chip itself that can easily damaged and become unreadable, etc. To solve these problems, the author wants to develop a new system utilizing wireless technology based on ESP32 board. The system consists of 5 main components, those are server, access point, ESP32 master, ESP32 slave, and client. Both type of clients, students and lecturers, are going to use application installed in their smartphone to communicate with ESP32 slave in order to do attendance recording. System test result shows that the system enables students to do attendance recording process from their seats without any physical contact with each other. The result also shows that the system has 100% client verification accuracy, for both students and lecturers, with less than 1 second process time for each student and average 700-800 B/s data rate.*

**Keywords :** *Wireless, attendance recording system, digital attendance recording system, technology.*