BAB VI

KESIMPULAN DAN SARAN

Setelah dijalankanya semua proses yang diusulkan dalam pembuatan prototipe, dapat disimpulkan bahwa:

1)Penggunaan papan ESP32 yang dikombinasikan dengan mikrofon INMP441 dan sensor PIR mampu untuk menghasilkan sebuah perangkat yang dapat berguna dalam pemantauan aktivitas beribadah anak. Dengan fitur WiFi, ESP32 sangat cocok untuk dipakai dalam pembuatan perangkat IoT untuk lingkungan rumah. Sebelum perangkat IoT digunakan, pengaturan jadwal salat lima waktu diatur sedemikian rupa sesuai dengan wilayah dimana perangkat tersebut digunakan. Menggunakan sensor PIR, perangkat IoT yang dirancang mampu untuk mendeteksi gerakan dengan jangkauan 5 sampai 7 meter. Setelah terdeteksi gerakan disekitar berdasarkan infra merah yang dipancarkan, mikrofon INMP441 akan mulai untuk merekam suara disekitar dan kemudian menyimpannya pada SPIFFS pada ESP32. Dengan mengakses SPIFFS, file audio hasil perekaman kemudian dibaca dan diunggah ke *local server* menggunakan IP *address* dan *port* yang telah diatur.

2)Model pembelajaran yang dibuat menggunakan *library* librosa dan tensorflow menunjukkan hasil yang memuaskan. Hal ini ditunjukkan dengan nilai akurasi yang baik pada proses pelatihan, validasi, dan pengujian model, yaitu 95% akurasi dan 23% loss untuk pelatihan, 92% akurasi dan 29% loss untuk validasi, dan 93% akurasi dan 32% error untuk pengujian.

3)Pengklasifikasian atau prediksi dilakungan menggunakan model pembelajaran yang telah dilatih dan diuji. Proses klasifikasi atau prediksi akan memakai file audio hasil perekaman yang telah dilakukan oleh perangkat IoT yang tersimpan pada folder di *local server*. Jika hasil prediksi menunjukkan suara anak yang diinginkan, dalam hal ini suara anak belum pubertas, maka sistem akan mengirimkan notifikasi sederhana ke orang tua yang berisikan anjuran untuk mengingatkan anaknya bahwa waktu salat tiba.

Untuk mengembangkan penelitian ini lebih lanjut, terdapat beberapa saran atau masukkan yang ingin peneliti sampaikan, antara lain:

1)Memperbanyak jumlah dataset yang akan digunakan dalam proses pelatihan dan pengujian model pembelajaran.

2)Mencoba untuk menerapkan prototipe yang diusulkan dalam kehidupan nyata. Evaluasi dan kembangkan prototipe tersebut agar menjadi lebih baik, seperti menambah jumlah sensor baru, mengganti mikrofon yang lebih baik, dan seterusnya.

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