

RANCANG BANGUN *WEBSITE* PENDETEKSI WARNA PAKAIAN *REAL-TIME* BERBASIS YOLOv8 UNTUK PENYANDANG BUTA WARNA

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ABSTRAK

Individu dengan buta warna kerap mengalami kesulitan dalam membedakan berbagai warna pada pakaian, yang dapat memengaruhi kepercayaan diri dalam berpenampilan. Penelitian ini bertujuan mengembangkan sistem pendeteksi warna pakaian berbasis algoritma YOLOv8 yang terintegrasi ke dalam platform *website*, guna memfasilitasi deteksi warna secara mandiri dan *real-time* melalui kamera. Dataset terdiri dari enam kategori warna, yakni merah, biru, hijau, *maroon*, *navy*, dan *army*, yang dilabeli menggunakan Roboflow dan diperluas melalui teknik augmentasi. Model YOLOv8s dilatih selama 100 epoch dengan ukuran gambar 800 piksel menggunakan Google Colab. Hasil evaluasi model pada lingkungan pelatihan menunjukkan nilai *Precision* sebesar 0,996, *Recall* 1,00, dan *F1-Score* 0,998. Sementara itu, pada pengujian sistem yang diimplementasikan ke dalam *website* secara *real-time*, diperoleh *Precision* sebesar 0,983, *Recall* 0,983, *F1-Score* 0,979, dan *Accuracy* 98,0%, yang menunjukkan kinerja sangat baik dalam kondisi operasional sebenarnya. *Website* terdiri atas empat halaman utama: *Home*, *About*, *Color Palette*, dan *Contact*. Sistem ini memungkinkan pengguna mendeteksi warna pakaian secara langsung melalui kamera tanpa perlu menginstal aplikasi tambahan. Berdasarkan hasil evaluasi, sistem ini terbukti efektif, akurat, dan berpotensi menjadi solusi teknologi asistif yang inklusif bagi penyandang buta warna.

Kata kunci: YOLOv8, Deteksi Warna Pakaian, Buta Warna, Computer Vision, *Website*, Deep Learning, Real-time.

DESIGN AND CONSTRUCTION OF A REAL-TIME CLOTHING COLOR DETECTION WEBSITE BASED ON YOLOv8 FOR COLOR-BLIND PEOPLE

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ABSTRACT

Individuals with color blindness often experience difficulty distinguishing various colors in clothing, which can affect self-confidence in appearance. This study aims to develop a clothing color detection system based on the YOLOv8 algorithm integrated into a website platform, to facilitate independent and real-time color detection through a camera. The dataset consists of six color categories, namely red, blue, green, maroon, navy, and army, which are labeled using Roboflow and expanded through augmentation techniques. The YOLOv8s model was trained for 100 epochs with an image size of 800 pixels using Google Colab. The model evaluation results in the training environment showed a Precision value of 0.996, Recall 1.00, and F1-Score 0.998. Meanwhile, in real-time testing of the system implemented into the website, the Precision was obtained at 0.983, Recall 0.983, F1-Score 0.979, and Accuracy 98.0%, indicating excellent performance in real-time operational conditions. The website consists of four main pages: Home, About, Color Palette, and Contact. This system allows users to detect clothing colors directly through the camera without the need to install additional applications. Evaluations have shown the system to be effective, accurate, and has the potential to become an inclusive assistive technology solution for people with color blindness.

Keywords: *YOLOv8, Clothing Color Detection, Color Blindness, Computer Vision, Website, Deep Learning, Real-time.*