merge\_segments<-function(segments) {

merged\_segments <- segments[1, ] # Initialize merged segments with the first segment

for (i in 2:(nrow(segments)-1)) {

curr\_segment <- segments[i, ]

next\_segment <- segments[i+1, ]

prev\_segment <- merged\_segments[nrow(merged\_segments), ]

if ((curr\_segment$seg.mean > 1.5 && prev\_segment$seg.mean > 1.5) ||

(curr\_segment$seg.mean < 1.4 && prev\_segment$seg.mean < 1.4) ||

(curr\_segment$seg.mean < 1.5 && prev\_segment$seg.mean > 1.5 && curr\_segment$Length<5000 && next\_segment$seg.mean>1.5) ||

(curr\_segment$seg.mean > 1.5 && prev\_segment$seg.mean < 1.5 && curr\_segment$Length<5000 && next\_segment$seg.mean<1.5))

{

# Merge segments if both have seg.mean > 1.5, or separated by a num.mark<10 segment

merged\_segments[nrow(merged\_segments), "loc.end"] <- curr\_segment$loc.end

merged\_segments[nrow(merged\_segments), "Length"] <- prev\_segment$Length + curr\_segment$Length

merged\_segments[nrow(merged\_segments), "num.mark"] <- prev\_segment$num.mark + curr\_segment$num.mark

merged\_segments[nrow(merged\_segments), "seg.mean"] <- (prev\_segment$seg.mean \* prev\_segment$Length +

curr\_segment$seg.mean \* curr\_segment$Length) /

(prev\_segment$Length + curr\_segment$Length)

} else {

# Append current segment as a new merged segment

merged\_segments <- rbind(merged\_segments, curr\_segment)

}

}

i<- nrow(segments)

curr\_segment <- merged\_segments[nrow(merged\_segments), ]

next\_segment <- segments[i, ]

prev\_segment <- merged\_segments[nrow(merged\_segments)-1, ]

if ((curr\_segment$seg.mean > 1.5 && prev\_segment$seg.mean > 1.5) ||

(curr\_segment$seg.mean < 1.4 && prev\_segment$seg.mean < 1.4) ||

(curr\_segment$seg.mean < 1.5 && prev\_segment$seg.mean > 1.5 && curr\_segment$Length<5000 && next\_segment$seg.mean>1.5) ||

(curr\_segment$seg.mean > 1.5 && prev\_segment$seg.mean < 1.5 && curr\_segment$Length<5000 && next\_segment$seg.mean<1.5))

{

# Merge segments if both have seg.mean > 1.5, or separated by a num.mark<10 segment

merged\_segments[nrow(merged\_segments), "loc.end"] <- curr\_segment$loc.end

merged\_segments[nrow(merged\_segments), "Length"] <- prev\_segment$Length + curr\_segment$Length

merged\_segments[nrow(merged\_segments), "num.mark"] <- prev\_segment$num.mark + curr\_segment$num.mark

merged\_segments[nrow(merged\_segments), "seg.mean"] <- (prev\_segment$seg.mean \* prev\_segment$Length +

curr\_segment$seg.mean \* curr\_segment$Length) /

(prev\_segment$Length + curr\_segment$Length)

} else {

# Append current segment as a new merged segment

merged\_segments <- rbind(merged\_segments, next\_segment)

}

return(merged\_segments)

}