

Estimate M0 and T1 maps

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Set working directory

```
working_dir <- "~/mp2rage_data"
```

Provide input NIfTI filenames

```
# MP2RAGE UNI
in_uni <- paste0(working_dir, "/MP2RAGE_UNI.nii.gz")

# MP2RAGE INV2
in_inv2 <- paste0(working_dir, "/MP2RAGE_INV2.nii.gz")
```

Provide output NIfTI filenames

```
# MP2RAGE T1 map
out_t1 <-
  paste0(working_dir, "/MP2RAGE_Est_T1.nii.gz")

# MP2RAGE M0 map
out_m0 <-
  paste0(working_dir, "/MP2RAGE_Est_M0.nii.gz")
```

Provide MP2RAGE sequence parameters from protocol

```
# MP2RAGE parameters
slices_per_slab <- 240
slice_partial_fourier <- 8 / 8

mp2rage_params <-
  list(
    mprage_tr = 5.0,
    flash_tr = 6.9e-3,
    inv_times_a_b = c(900e-3, 2750e-3),
    flip_angle_a_b_deg = c(5, 3),
    num_z_slices = NULL
  )

mp2rage_params$num_z_slices <-
  slices_per_slab * c(slice_partial_fourier - 0.5, 0.5)
```

Estimate M0 and T1 maps

```
# Load UNI data
nii_uni <- readnii(in_uni)
data_uni <- nii_uni@.Data

# Load INV2 data
nii_inv2 <- readnii(in_inv2)
data_inv2 <- nii_inv2@.Data

# Estimate M0 and T1
list_of_t1_m0 <- mp2rage_estimate_t1_m0(in_uni_data = data_uni,
                                         in_inv2_data = data_inv2,
                                         param_list_mp2rage = mp2rage_params)
```

Write outputs

```
# Load NIfTI structure from UNI and write out M0 map
nii_m0 <- nii_uni
nii_m0@.Data <- list_of_t1_m0$m0_map
writenii(nim = nii_m0, filename = out_m0)

# Load NIfTI structure from UNI and write out T1 map
nii_t1 <- nii_uni
nii_t1@.Data <- list_of_t1_m0$t1_map
writenii(nim = nii_t1, filename = out_t1)
```