In [38]:
```
import json
import matplotlib.pyplot as plt
import numpy as np
```

In [39]:
```
with open("./stats/stats.json", "r") as read_file:
    data = json.load(read_file)
```

In [40]:
```
agg_all_stats = {}
for module_stats in data:
    for stat in module_stats:
        if stat in agg_all_stats:
            agg_all_stats[stat] = agg_all_stats[stat] + module_stats[stat]
        else:
            agg_all_stats[stat] = module_stats[stat]
```

In [41]:
```
agg_all_stats
```

```
 'sccp.NumInstRemoved': 7743,
 'bdce.NumRemoved': 519,
 'gvn.NumGVNPRE': 465,
 'early-cse.NumDSE': 1475,
 'correlated-value-propagation.NumCmps': 38,
 'elim-avail-extern.NumFunctions': 65,
 'instcombine.NumDeadStore': 310,
 'licm.NumHoisted': 32,
 'licm.NumSunk': 47,
 'loop-unswitch.TotalInsts': 32,
 'loop-vectorize.LoopsAnalyzed': 9,
 'instcombine.NumFactor': 6,
 'instcombine.NumExpand': 11,
 'adce.NumRemoved': 2,
 'jump-threading.NumDupes': 5,
 'instsimplify.NumSimplified': 6,
 'lcssa.NumLCSSA': 24,
 'scalar-evolution.NumTripCountsNotComputed': 8,
 'early-cse.NumCSECVP': 1,
 'mem2reg.NumDeadAlloca': 1}
```

In [42]:
```
filtered_out_column_names = ['bitcode-reader.NumMDRecordLoaded',
                             'bitcode-reader.NumMDStringLoaded',
                             'functionattrs.NumNoCapture',
                             'functionattrs.NumNoFree',
                             'functionattrs.NumNoRecurse',
                             'functionattrs.NumReadNone',
                             'functionattrs.NumWriteOnly',
                             'globalopt.NumUnnamed',
                             'globalsmodref-aa.NumNoMemFunctions',
                             'globalsmodref-aa.NumReadMemFunctions',
                             'basicaa.SearchTimes',
                             'jump-threading.NumThreads',
                             'globalopt.NumFastCallFns',
                             'globalopt.NumInternalFunc',
                             'globalsmodref-aa.NumNonAddrTakenFunctions',
                             'inline-cost.NumCallsAnalyzed'
                            ]
```

In [43]:
```
for col in filtered_out_column_names:
    del agg_all_stats[col]
```

In [44]:
```
agg_all_stats
```

Out[44]:

```
{'cgscc-passmgr.MaxSCCIterations': 88228,
 'early-cse.NumSimplify': 1072587,
 'functionattrs.NumReadNoneArg': 177448,
 'mem2reg.NumSingleStore': 91254,
 'simplifycfg.NumSimpl': 1586040,
 'sroa.MaxPartitionsPerAlloca': 174753,
 'sroa.MaxUsesPerAllocaPartition': 617830,
 'sroa.NumAllocaPartitionUses': 1654494,
 'sroa.NumAllocaPartitions': 285559,
 'sroa.NumAllocasAnalyzed': 447991,
 'sroa.NumDeleted': 2687853,
 'sroa.NumNewAllocas': 234420,
 'sroa.NumPromoted': 284616,
 'early-cse.NumCSE': 838883,
 'instcombine.NumCombined': 8475932,
 'instcombine.NumDeadInst': 1390970,
 'instcombine.NumSunkInst': 160422,
 'mem2reg.NumPHIInsert': 324324,
 'early-cse.NumCSELoad': 70126,
 'gvn.NumGVNEqProp': 13785,
 'gvn.NumGVNInstr': 195352,
 'gvn.NumGVNSimpl': 13874,
 'inline.NumDeleted': 49718,
 'inline.NumInlined': 49841,
 'local.NumRemoved': 123311,
 'memdep.NumCacheCompleteNonLocalPtr': 62432,
 'memdep.NumCacheNonLocalPtr': 1316065,
 'memdep.NumUncacheNonLocalPtr': 2060485,
 'memory-builtins.ObjectVisitorArgument': 115041,
 'simplifycfg.NumSpeculations': 24861,
 'functionattrs.NumReadOnlyArg': 100350,
 'gvn.NumGVNLoad': 17851,
 'gvn.NumPRELoad': 29656,
 'memcpyopt.NumMemCpyInstr': 44601,
 'memcpyopt.NumMemSetInfer': 1364,
 'instcombine.NumConstProp': 5293,
 'mem2reg.NumLocalPromoted': 10656,
 'correlated-value-propagation.NumAnd': 124,
 'globalopt.NumDeleted': 1047,
 'instsimplify.NumExpand': 1549,
 'simplifycfg.NumSinkCommons': 12861,
 'memory-builtins.ObjectVisitorLoad': 48956,
 'correlated-value-propagation.NumPhis': 2853,
 'sccp.IPNumInstRemoved': 1522,
 'jump-threading.NumFolds': 4277,
 'reassociate.NumChanged': 25229,
 'instcombine.NumReassoc': 558,
 'instsimplify.NumReassoc': 559,
 'dse.NumFastOther': 121,
 'dse.NumFastStores': 1447,
 'sccp.NumDeadBlocks': 2095,
 'sccp.NumInstRemoved': 7743,
 'bdce.NumRemoved': 519,
 'gvn.NumGVNPRE': 465,
 'early-cse.NumDSE': 1475,
```

```
 'correlated-value-propagation.NumCmps': 38,
 'elim-avail-extern.NumFunctions': 65,
 'instcombine.NumDeadStore': 310,
 'licm.NumHoisted': 32,
 'licm.NumSunk': 47,
 'loop-unswitch.TotalInsts': 32,
 'loop-vectorize.LoopsAnalyzed': 9,
 'instcombine.NumFactor': 6,
 'instcombine.NumExpand': 11,
 'adce.NumRemoved': 2,
 'jump-threading.NumDupes': 5,
 'instsimplify.NumSimplified': 6,
 'lcssa.NumLCSSA': 24,
 'scalar-evolution.NumTripCountsNotComputed': 8,
 'early-cse.NumCSECVP': 1,
 'mem2reg.NumDeadAlloca': 1}
```

In [45]:
```
final_all_stats = {}
for stat in agg_all_stats:
    k = stat.split('.')[0]
    if k not in final_all_stats:
        final_all_stats[k] = 0
    final_all_stats[k] += agg_all_stats[stat]
```

In [46]:
```
final_all_stats
```

Out[46]:
```
{'cgscc-passmgr': 88228,
 'early-cse': 1983072,
 'functionattrs': 277798,
 'mem2reg': 426235,
 'simplifycfg': 1623762,
 'sroa': 6387516,
 'instcombine': 10033502,
 'gvn': 270983,
 'inline': 99559,
 'local': 123311,
 'memdep': 3438982,
 'memory-builtins': 163997,
 'memcpyopt': 45965,
 'correlated-value-propagation': 3015,
 'globalopt': 1047,
 'instsimplify': 2114,
 'sccp': 11360,
 'jump-threading': 4282,
 'reassociate': 25229,
 'dse': 1568,
 'bdce': 519,
 'elim-avail-extern': 65,
 'licm': 79,
 'loop-unswitch': 32,
 'loop-vectorize': 9,
 'adce': 2,
 'lcssa': 24,
 'scalar-evolution': 8}
```

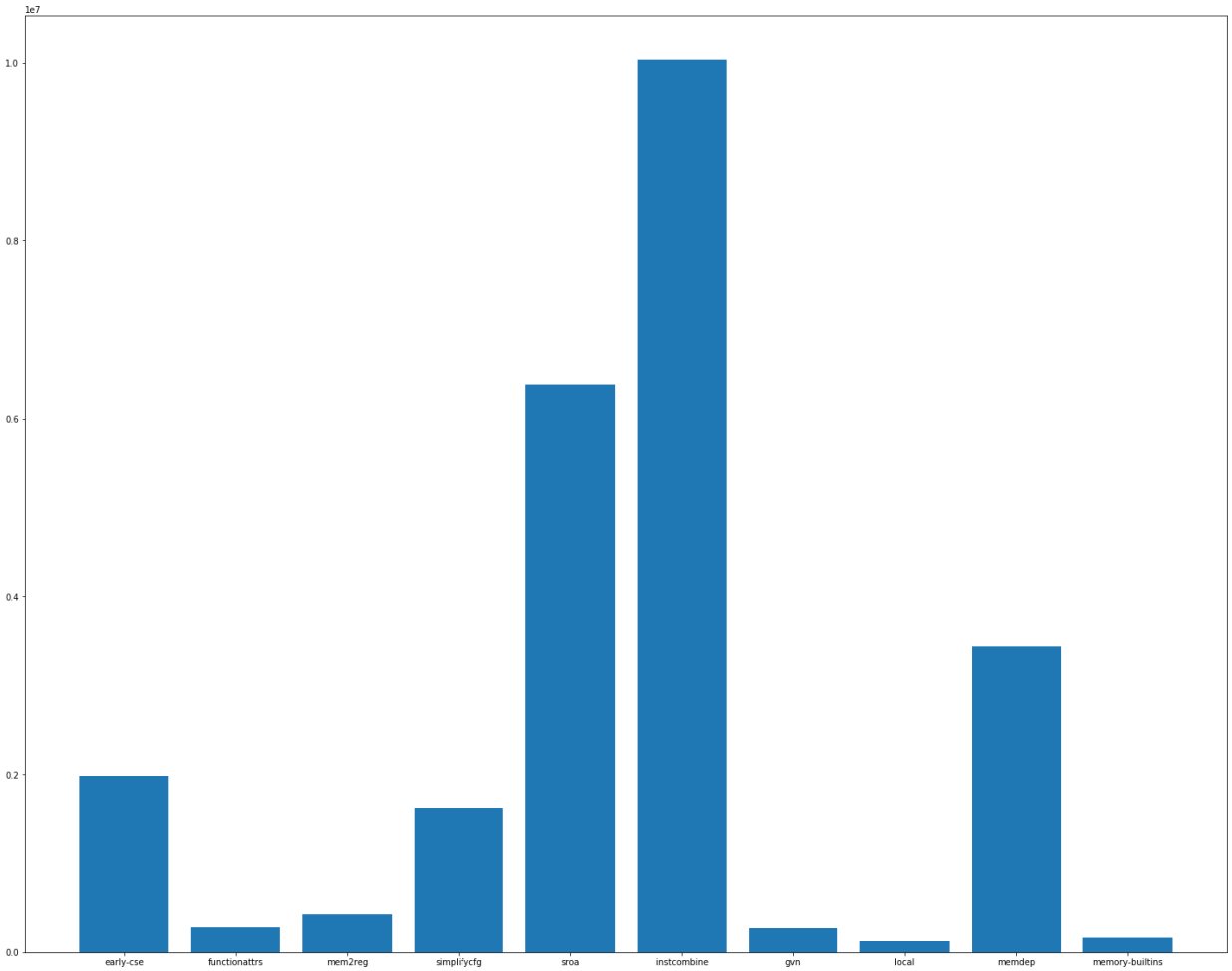
In [47]:
```
disp_stats = {}
for stat in final_all_stats:
    if final_all_stats[stat] > 100000:
        disp_stats[stat] = final_all_stats[stat]
```

In [48]:
```
disp_stats
```

Out[48]:
```
{'early-cse': 1983072,
 'functionattrs': 277798,
 'mem2reg': 426235,
 'simplifycfg': 1623762,
 'sroa': 6387516,
 'instcombine': 10033502,
 'gvn': 270983,
 'local': 123311,
 'memdep': 3438982,
 'memory-builtins': 163997}
```

In [49]:
```
plt.subplots(figsize=(25,20))
plt.bar(disp_stats.keys(), disp_stats.values())
```

Out[49]: <BarContainer object of 10 artists>



In [ ]:
```

```

In [ ]:

In [ ]:

In [ ]: