# Words for 3-D Vision

Nie Shicong

April 1, 2020

### Contents

Liı	Linear Algebra Done Right	
1	Chapter 2 & Chapter 3	3
2	Chapter 4	4
MVG Lecture 8, 9, 10		5
3	Chapter 5	6
4	Chapter 8	7
5	Direct approaches for Visual SLAM	8
6	Chapter 11	8
7	Review	10
8	Introduction to Linear Algebra	10
9	Toefl Listening	11
10	Miscellaneous	14
11	slam	33

# Linear Algebra Done Right

audacious torturous banish make up for ... in a fasion genuine / formal , due to the next class without charge I'm no longer around

```
first brush
immerse yourself in ...
an emphasize on attaining ...
zip through a page
on your part
ponder
internalize
without regard to ...
owe a debt
heritage
antiquity
Bestowing proper credit on ...
undertake
In no case should ...
dispense with
clutter
vague
as rigorously defined as
philosphy
lurk
proposition
corollary
once and for all
be enlarged with
triplet
transport
parallelepiped
Roughly speaking, ...
anticipate
derive / derivation
refer to \dots as \dots
instantaneous / spontaneous
be doomed to ...
```

### 1 Chapter 2 & Chapter 3

```
rudiment / rudimentary
In a broad figurative sense
frescoe
mosaic
landscape
It's no coincidence
proficient
matter
vibrant
compelling
rather sophisticated
indicative
portray
graph
irradiance
by no means trivial
diffraction / refraction / reflection
germane
we can argue with
emit
cone
negligible
undeflected
upside down
subtend
radiance flux
consist in ...
compensate
... outlined above
...thus obtained
articulate / articulation
aberration
counterpart
```

### 2 Chapter 4

```
reconcile
at the outset
moreover
discern / discernible
presumably
photom
discrepancy
corrupt
manifestation
counteract
envision
opaque
suggestive
cardinality
count on ...
conceive
rephrase
lend itself to ...
lump
departure
scatter
ambient
translucent
anisotropic
commonplace
hint
How do we proceed?
ill / well posed
an abuse of notation
tilde / wiggle
identical
more diagonally
moderate
nonuniform
, irrespective of \dots
\dots made of \dots
```

```
\operatorname{regard} \ldots \operatorname{as} \ldots
decent
curvature
marble
distinctive
elucidate
extended
qualitative / quantitative
diffuse
warp
substantial
prune (out)
pyramid
jerk
whilst
shearing
field
even if
chameleon
specularity / specular
among other things
mega
heuristic / heuristics
discriminate / discriminative
mannequin
dummy
doable
stroboscope
agenda
alternate among / between
side benefit / effect
```

# MVG Lecture 8, 9, 10

fascinating pursue

schematic
involved
suboptimal
haunt
recipe
reasoning
inference
pathological
chances are that ...
reminiscent of ...
...mingled with ...
derive / derived / derivation
bombastic

#### 3 Chapter 5

unveil photogrammetry Without loss of generality / continuity characterization sufficiency / necessity draw attention to the case that ... three out of the four ... parallax exercise caution to ... be of more significance for ... bury uncontroversial universally accepted probable / improbable When combined with, ... In what follows, ... oversight In the remainder of ... multimodal optimality

#### 4 Chapter 8

```
panoramic / panorama
at most
taxonomy
gross errors
pertain to
thesaurus
suspicion
be promoted by ...
quadrilinear
annihilate
quadruple
clarify / clarity / for clarity
rectilinear
glimpse
purturb
synthesis
concave
crank up
isoline
asymptotic
be inferior to
zig-zag
contract
paraboloid
provided (that)
in this regime
revert to
profit from
extremality / extremity
quasi
damp
overlook
be (all) set to go
```

silhouette contour a whole lot monocular footage circumvent

# 5 Direct approaches for Visual SLAM

invariably
devastate
deteriorate
degrade
nuisance
sideways
close by
soap films
in-between
revision
residuum / residual
voxel
more or less
alleviate

# 6 Chapter 11

multifaceted irregular polygonal so as to ... convolve forcibly suppress tile

```
disparate
elaborate
contrast
sawtooth
aliasing
sinusoidal / sinusoid
convey
{\it transmission}
adequate
waveform
ego-motion / ego / egoistic /egoistical
primitive
\quad multiscale
superpose
be similar in spirit to ...
compromise
macroscopic
rationale
caveat
radically
forego
laden
be reputed to ...
putative
orphan
underlying
be free of ...
handful of ...
render sth. be
settle for sth.
set up
two orders of magnitude
uneven
play with ...
in place of ...
extrapolate
convex hull
carve
```

tetrahedra prism arch surfaces of revolution bookkeeping entail

#### 7 Review

long known indispensable rational / rational number quotient

## 8 Introduction to Linear Algebra

```
all-important / vitally important / crucial
hammer away at the difference between ... and ...
... back off from ...
seesaw / teeterboard
spreadsheet
This is more than ...
at once / at the same time
stand for ...
either way
humble
fall into place
The odds are ...
basic facts
regard ... as ...
common sense
magician
sweep
provision
```

# 9 Toefl Listening

```
folk / fairy tale
act out
narrate
props
scenery
be disillusioned with
be grappling with
symbolize
seemingly
unsolvable
turmoil
bare
... be a departure from ...
make us see
be swept up
I'd love / like to ...
\dots be the same \dots as \dots
the significance difference is with ...
costume
\dots be teemingly with \dots
organism
...get as much popular attention as ...
whale
microscopic
algae
... aren't as exciting
bulk, bulk of ...
plankton
fresh water
mystery
not the way birds do
```

```
must
commute / commuting
stimulus / stimuli
sun's rays
barely
penetrate
away from
sunlight
head back toward ...
illuminate
expend
predator / predator avoidance
Make sense, doesn't it?
But what do we do with ...?
at great depth
light up
bioluminescent
despite all these
by sight
presence and absence
prey / prey on
ultra-violet
conserve
feeding
digest
archaeology
go out into the field
shovel
an array of
inter-disciplinary / multi-disciplinary
muon
\dots result from \dots
subatomic
start over
basically
proton
zip through
outer space
```

be critical for ... be closely based on ... occasionally hardly ever ... anymore originally controversial filmmaker purity over time orchestra if wannted drum, rolling of drums ... or whatever But that wasn't as common ..., the ones concerned about Trouble is(was), ... the luster wears off commerce was it ever? the commercial types now that ... visual medium stage straight adaptations from ... since ... all they pretty much did was ... on the mark nonsynchronous expressive have experience with ... live radio technician ...that makes sense to them less obvious Anyway, ... look at this in various ways radical advocate

a bit of an exaggeration What meant to say was ... making money proliferate / proliferation

#### 10 Miscellaneous

striving / strive grand goals core mission non-profit fuel ... openly sponsor editorial publications across the world workshop panel / panelist webinar mailing-list newsletter disseminate more collaborative / inclusive have sb. on-board curate advisory board enthusiast at scale alchemist predictive maintenance schedule a meeting / call quota coffee break poster interface a new problem with ... peer, peer review, peer pressure be articulated in two phases

```
announce / announcement
adherence to .../ adherent
final aggregation score
ever more
exclusively focus on ...
memory overhead
take / draw inspiration from ...
disentangle
a surge of
mediate, be mediated by ...
neurocognitive
sensorimotor
remain a long-standing challenge for ...
... factor in ...
curriculum
progressively / progressive
over long time spans
interfere with ...
abrupt / abruptly
excel = be master of ... / excel at ...
a batch of
pragmatic pragmatically
hinder
methodology
developmental
in scenarios of ...
timely
refine / refinement
on the basis of ...
mammal / mammalian
throughout the lifespan
contingency
sustainable / sustainability
sustained = continuous
neurophysiological / neurophysiology
visiting student
eligible
democratic / democracy
```

```
... be made possible with / by ...
consultant
lineup
given
on a daily basis / on a regular basis
cutting edge
underway
initiative
hub of infomation
didactic
avalanche
with ...in mind
value ...
showcasing
venue
cause
bibliography / bibliographic
hiccup
antithetical
antipodal
utterly
nerve ...
bombard / be bombarded with ...
arrange = lay out
as originally conceived
living creatures
be adept with ...
repurpose
in some ad hoc way
dispute
in any case
self-imposed
submarine
harness the power
towards its own purposes
steer
accrue
brilliant, a brilliant idea
```

```
metaphor
corollary
teleoperation
rebel / rebellion
be constantly chaning / evolving
regularity
a rough idea
string
transpire
unfold
at its own pace
prose
sensible
unorthodox
peg, pegged to ...
entrust
probe
waterfall
definitive
cascade
tailor, be tailored to ...
diploma
cohort, a diverse cohort of ...
attest / attested
defer
transcript
comparable
proficiency / proficient
postsecondary
ivy
a huge time commitment
rigorous
embark
accredit / accredited
phenomenal
in no way
disrupt / disruption
breadth
```

```
demonstrated leadership
deposit
flush
await / be awaiting
turtle / tortoise
carnivorous / herbivores
imperative
pervasive
scavenge / scavenger
refrain from ...
scarity of ...
sensitization
habituation
exposure
a well lit room
reciprocal
retreat into ...
secrete
ion
astounding
finer
acuity
causal / casual
differentiate
conditioning
be made famous by ...
saliva / salivate
..., as such in the example of ...
cattle
\det\! r \ldots from \ldots
in the wild
uncover
inhibit / inhibition
octopus
jar
\operatorname{crab}
... trapped inside
hint at ...
```

```
... be paired with ...
fade away / out
renewed
embrace
malleability
regulate
compensatory
homeostatic
hippocampus
neocortex
human subject research
the vast majority of ...
modality-specific
ecological
multisensory
embody
in one's infancy / infant
stepping stone
ad-hoc
astonishing
assimilate
rehabilitate / rehabilitation center
modulate
overarching
predominant / prominent
profile
grant
seminal work / seminal fluid
ocular
newborn
kitten
deprivation
... be characterized by ...
\dots with the aim to \dots
comprise
replicate / replica / replicant
neuroscience
finding
```

```
preferential
transient
amend
be contingent on ...
should / if
usher
interleaved
in favor of ...
graceful
richness
long-standing
mitigate / alleviate
\dots to make sense of \dots
be immersed in ...
spatio-temporal
make massive use of ...
reservoir
opt, opt to
plastic / elastic
embed / embedded
intractable
surrogate / surrogate mother
mutable / mutation
\dots in response to \dots
accommodate
enforce
vanilla
resemble
plausible
habituate to .../ habitutated
these results reinforce that ...
... be accouted for
interplay
episodic
rehearsal
cause-effect
ambiguous
revise
```

```
spontaneously
a wealth of ...
crossmodal
schematic / schematic view
valuable
intricate
dictate / be dictated by ...
staged
bootstrap
tutor / tutoring
unveil
disclose, disclose the cause
bilateral
innate
deceptive / deception
scaffold
exogenous / endogenous
be congruent with / congruency / congruent triangle
perceptual
bind
causal inference
stationary
disregard
radically
over the course of millions of years
underpin
evolutionary
in-silico
As a consequence = Consequently
inspiration has originated more strongly from ...
acronym
genetic
...take place as ...
ambitious
\dots derived from \dots
arguably
set the stage for ...
a remarkable increase in ...
```

```
dedicated
...than in the past
resonate with the readers / resonate
touch upon
in the remainder of ...
with the intent / intention to ...
make-up
manifest / manifestation
blueprint
zygote
nurture
cultivate
be now more aware of ...
highlight the importance of ...
deceive
make no pretence of ...
diversity and inclusion
open-ended / open-endedness / open-ended questions
pathway
an alternative to ...
empower
synergy / synergy effect / in synergy
statics / dynamics
conducive / be conducive to ...
reside
delegate
foster
cope with ...
genotype
aspiration
resurgence
synopsis
speculation
pillar
In essence = Essentially
\dots in light of \dots
bloom
around 2019
```

```
shift
It's not after long that ...
bet on ...
masterfully
expertise
neat
be indebted to sb. for sth.
pickle
customary / customarily
brevity / clarity
wit
perturbation
mastery
neglect
performant
ingest
comply with ...
trademark
aforementioned
malformed
blob
glob
a patient is admitted to the hospital
administer drug
concerned
relative
a sick thought
not uniformly understood
moderately
be wrong in ...
subjective belief
a rational person
conscious, make conscious use of ...
inner-held
\dots be judged to \dots
dwell (further) on ...
philosophical issues
strike a balance
```

```
outgrowth, an outgrowth of ...
involvement in sth.
attend a course
span the entire spectrum
Accordingly, ...
In this spirit, ...
sketch
otherwise
stand in the way of ...
attentive
conditioning
omit / omission
recitation
elsewhere
simpliticy in exposition and sophistication in analytical reasoning
a rich set of ...
go into debt / be in debt
acknowledge
be thankful to ...
Last but not least, ...
take sth. (it) as a given (that ...)
a short review about ...
antiquity
at the outset
toss, a coin toss
a die roll
conceivable / conceivably
excerpt
in accordance with ...
collective
immediately obvious
underlying
Strictly speaking, ...
pathological
dart, throw a dart
qualify
constitute
successive
```

```
identify
namely
downstream, ...downstream from ...
For example; As another example
Proceeding similarly, ...
predede, preceding
settle on ...
by necessity
counterpart
\dots differ from \dots in that \dots
spin
\dots hinge on the fact that \dots
incidentally
legitimate / legitimacy
tractable / intractable
Invariably though, ...
inscribe / inscribed
equilateral triangle
millennium
game of chance
touch upon
lay a / the foundation for . . .
raise the standard
rigor / rigorous
influential
axiom / axiomatic
pervasive / pervasively
...in conjunction with ...
traverse / traversal
be inferior to ...
a much discussed problem
stick to / adhere to / insist on
under this strategy
celebrated
...amount to ...
malignant / benign tumor
a common first thought
aircraft
```

```
... state that ...
In words, ...
subsystem
subinterval
... consist in turn of ...
populate, be populated with ...
dial up
modem
the probability of interest
facility
facilitate
combinatorics
in principle
thought
a large portion of ...
\operatorname{desired}
consecutive / contiguous
cardinality
algebraic identity
instrument / instrumental, instrument readings
two raised to the fifth power = two to the fifth
a notion of
associate with sth. sth.
focus exclusively on ...
qualifier
a lot of new ground
the general line of development
genuine / genuinely, genuinely new
give rise to a value
In what follows, ...
\dots in place of \dots
throughout
conceptually straightforward
range over ...
By a similar argument, ...
...is through ...
characterize
be either for or against ...
```

```
For all its simplicity, ...
... be sketched in the section 3
Note that here and elsewhere, ...
the coin comes up a head with probability p
prior
refer to ... as ...
..., specialized to ...
come up for the first time
be monotonically decreasing with ...
misspell
typo
\dots be well modeled with \dots
justification
It is often desirable to ...
monetary reward
...in proportion to ...
a weighted average of ...
As motivation, ...
anticipate
roughly equal to ...
dispersion
pitfall
It is not generally true that ...
at a speed of ...
... is obtained by nothing that ...
prototype / prototypical
attempt, attempt to
coercible
resist
be evolving
I'm still not done learning
set up a structure for ...
... as I see it
elaborate upon ...
groundwork
one thing that initially surprised me was ...
... come into play
There is no one right way to ...
```

methodical / methodically linguistics field of study rhythm / melody keen modular mind vocal, vocal awareness chunk first-hand unconventional intonation stick clap consonance / disonance palate most of the time muscle / muscular youngster stick out / stick way out dark is drawing in cavity nasal to name a few look up ... make sb. sure check out ... go over ... due to a difference of opinion homephone make a phone (call) repeat out loud / practice out loud drill ... you won't transform overnight dedicated, be dedicated to ... singleton bisect / bisection timezone polaris

```
anagram
palindrome
congestion
pertain, pertain to ... = belong to ...
universe
In the same spirit, ...
be destined to ...
... argues in favor of ...
regardless of ...
flaw / flawed
to some extend
paradox / paradoxical
scrutinize
a great deal of information
Roughly speaking, ...
devil / devilish
quirk / quirky
testament
a general agreement between intuition and what is mathematically correct
... extends naturally to the case of ...
imperative
dialog
weave / weaver, be woven into ...
restraint
budget
Over the past three decades or so, ...
purgeable
bump
synergy
affordance
induce
worthwhile
As machine learning is maturing, ...
formalism
toy / non-toy problem
plague, be plagued by ...
reinvention
induction / inductive
```

```
speedometer
insightful
... be called for
In any case, ...
cf. = confer
Graphically, ...
gambler
anticipate / anticipated
for the time being
light bulb
burn out
elapse
meteorite
Sahara desert
..., be it through .../ Be it throught ...
staircase form
line of argument
a case in point
in point of ...
Loosely speaking, ...
snowfall
celebrate / celebration / celebrated
conclude
corrupt
...parallel ...
In complete analogy with ...
vicinity
needless to say = It goes without saying that ...
needle
mark the origin of ...
a surface is ruled with lines
line segment
acute angle / obtuse angle
midpoint
justify
the remaining time up to completion
metro (train)
metropolitan
```

```
board the train
be analogous to ... / in analogy to ... / an analog of ...
... carry over to the present context
schematic
It suffices to ...
The converse of this statement is also true
stencil / template
chromosome
bilingual
in a row, 7 days in a row
versatile / versatility
variablity
interlinked
in the vicinity
but they still can't rival homo sapiens for complexity
proposition
be agnostic to ...
they can be advantageously combined
better off, better off alone / better off without ...
nuisance, nuisance variable
latent variable
preclude
resort to
causality
neat / neatly
punctuation marks
unleash
I find them severely wanting in abilities
arsenal
divulge
ideology
triumph
..., but that wasn't always the case
proceed in chronological order
hype
extravagant
publicity stunt
clip
```

```
cardinality
a means to an end
It's almost exclusively used for visualization
By itself this isn't very useful, but ...
genre
be akin to ...
induce
spark a great deal of interests
lately = recently
In the past this was all but impossible, ...
in complex learning regime
endorse / endorser / endorsement
amortize / amortization
resume membership
intra- / inner-
episode / episodic
hallucinate
assortative
resilience
discriminate between ...
confine, be confined to ...
a multitude of ...
... outperform ... by a significant margin
...be nigh
grace / graceful / gracefully
a gentle introduction
clarify the relationship between ...
myth = a commonly believed but false idea
cont. = continued
synthesis / synthesize
digest
compositionality = hierarchy
coefficient and intercept
mainstream models
an emerging line of work
cast ...as ...
In the same vein = In the same style of speaking or writing
attenuate = weaken
```

alleviate
meliorate its effects
rife, be rife in ...
discriminate specific tasks
conceived
mitigate, mitigate the risks
commonality
the unified definition of ...
backbone
acyclic graph
thesaurus
proactive
lockdown

#### 11 slam

make it free of noise prolific propeller proximity sloppy rail it deviated from its path diameter get drift to one side by-product azimuth lawn mower compromise surveillancereef  ${\rm reefer}$ archaeology / archaeologist ceiling infrared showcase

conduct the project proximity, proximity sensor joystick revolution, revolution of the wheels ... same holds for ... sketch, a sketch of ... successive iterative process it happens from time to time ... prevail in the domain of ... volumetric representation there is no way around ... geodesy acronym coin / coined

...thus far comprise in-depth thoroughly central topic exclusively exogenous amenable, be amenable to ... exposition contemporary ... is by no means to be ... Rather, ... descriptive not infeasible Such extensions, ... characterize ... appear, may appear to ... provision in the first place vastly overestimate accommodate certain tasks postulate whereabout, the whereabouts of people accrue .....as indicated This chapter provides in detail ...projectile ...concerned with ...a comprehensive introduction into / to ...subfield monograph overarching temporal / spatial extension commonality discourse insofar, insofar as ... = to the degree that ... wordy laborious at times ... emerge with ... superficial exposition planetary be in one's infancy in the proximity of ...First and foremost, ...perturb / perturbation heavy-duty wear-and-tear flaky rather crude realm stumble / stumbling pay tributes to ... Put differently, ... ambiguity degree of belief in the face of ... graceful / gracefully pertain, ... pertaining to ... distinguishable / indistinguishable plausible by no means does ... momentary err deprive paramount coastal anticipate / anticipation cut across reactive / proactive relieve insurmountable sole sound ... come at a price weak link unprecedented bargain, at bargain prices branch into / out self-explanatory pitfall set forth, ... set forth below virtually familiarize ... predominant / predominantly brevity, ... lies in its brevity coincide / coincidence a final concept of importance moment