

自动生成龙德投标结果分析表（简易法）

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clear;clc;
% 可投的公司
our_vote_company_all = GetVoteCompany();
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%% 工程信息 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
path = '\\longde\\longde\\008-投标中心\\006-数据分析中心\\招标文件PDF汇总\\';
file = '田径运动场升级改造项目.pdf';
filename = [path, file];
% 自动提取关键信息
[result, pdfstr] = GetPdfContent(filename);
```

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[WARN] PDCIDFontType0 - Using fallback AdobeFangsongStd-Regular for CID-keyed font STSong-Light
[WARN] PDCIDFontType0 - Using fallback AdobeFangsongStd-Regular for CID-keyed font STSong-Light
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% 工程名称
project_name = file(1 : end-4);
h_bid = result("h值");
Rp_bid = result("下浮率");
M_bid = result("最高报价");
qualification = result("资质要求");
project_address = result("镇区");
bid_time = result("开标时间");
bid_address = result("开标地点");
bid_method = result("投标方法");
bid_type = result("标书类型");
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%% Excel 内容
xlsx_content.project_name = project_name;
xlsx_content.project_address = project_address;
xlsx_content.qualification = qualification{1};
xlsx_content.bid_time = bid_time;
xlsx_content.bid_address = bid_address;
xlsx_content.M_bid = M_bid;
xlsx_content.Rp_bid = Rp_bid;
xlsx_content.h_bid = h_bid;
xlsx_content.bid_method = bid_method;
xlsx_content.bid_type = bid_type;
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%% 自动获取参数 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
zb_xlsx = readtable('\\longde\\longde\\008-投标中心\\006-数据分析中心\\分析结果汇总\\zb.xlsx', 'VariableNames');
Rps = zb_xlsx("预测下浮率");
vote_company_count_pres = zb_xlsx("预测人数");
Project_names = zb_xlsx("工程名称");
Ks_real = zb_xlsx("K值");
[~, pos_index] = ismember(project_name, Project_names);
Rp_pre = Rps(pos_index);
K_pre = 0;
K_real = Ks_real(pos_index);
vote_company_count_pre = vote_company_count_pres(pos_index);
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%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%% 预测区 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
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P_pre = M_bid * (1 - Rp_pre);
T_pre = P_pre * (1 - K_pre);
Rt_pre = 1 - T_pre / M_bid;
rng('default');
Ra_pre = Rp_pre + 0.004 + 0.0005 * rand;
A_pre = (1 - Ra_pre) * M_bid;
% 预测 K 值下浮
K_result_pre = cell(9, 3);
Ks = linspace(-0.02, 0.02, 9);
for i = 1:9
    K_result_pre{i, 1} = Ks(i);
    K_result_pre{i, 2} = P_pre * (1 - Ks(i));
    K_result_pre{i, 3} = 1 - P_pre * (1 - Ks(i)) / M_bid;
end
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%% Excel 内容
xlsx_content.vote_company_count_pre = vote_company_count_pre;
xlsx_content.P_pre = P_pre;
xlsx_content.T_pre = T_pre;
xlsx_content.A_pre = A_pre;
xlsx_content.K_pre = K_pre;
xlsx_content.Rp_pre = Rp_pre;
xlsx_content.Rt_pre = Rt_pre;
xlsx_content.Ra_pre = Ra_pre;
xlsx_content.K_result_pre = K_result_pre;
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%% 确定有效数据 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
% 读取 .xlsx 文件
path_xlsx = '\\longde\longde\008-投标中心\006-数据分析中心\投标数据Excel文件汇总\';
try
    file = readtable([path_xlsx, project_name, '.xlsx'], 'Sheet', '开标信息', 'VariableNamingRule', 'preserve');
catch ME
    file = readtable([path_xlsx, project_name, '.xlsx'], 'Sheet', 1, 'VariableNamingRule', 'preserve');
end
% 获取投标报价列
Gn = file("投标报价");
% 寻找空值下标, 读取进来之后是 NaN
index = isnan(Gn);
% 删除无效投标
file(index, :) = [];
Gn(index, :) = [];
% 提取企业名称列
company_name = file("企业名称");
file = table(company_name, Gn, 'VariableNames', {'企业名称', '投标报价'});
% 有效投标家数
vote_company_count = length(Gn);
% 参投公司
our_vote_company_count = length(our_vote_company_all);
flag = false(our_vote_company_count, 1);
for i = 1:our_vote_company_count
    curCompany = our_vote_company_all{i};
    for j = 1:vote_company_count
        if strcmp(curCompany, company_name{j})
    
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        flag(i) = true;
        break;
    end
end
end
our_vote_company_valid = our_vote_company_all(flag, 1);
our_vote_company_invalid = our_vote_company_all(~flag, 1);
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%% Excel 内容
xlsx_content.our_vote_company = [our_vote_company_valid; our_vote_company_invalid];
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%% 计算关键值 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
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Gn_sort = sort(Gn);
if vote_company_count > 19
    % 采用去尾法取整
    cut = floor(0.2 * vote_company_count);
elseif vote_company_count > 4
    % 首尾去掉 1 个
    cut = 1;
else
    cut = 0;
end
% 参与计算的报价
Gn_cal = Gn_sort(cut + 1 : vote_company_count - cut);
% 去最高最低平均价 P
P_real = mean(Gn_cal);
% 下浮率
Rp_real = 1 - P_real / M_bid;
% 中标基准价 T
T_real = P_real * (1 - K_real);
% 下浮率
Rt_real = 1 - T_real / M_bid;
% 综合平均价 A
A_real = mean(Gn);
% 下浮率
Ra_real = 1 - A_real / M_bid;
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%% 开标数据 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
% 计算下浮率
Rp_vote = 1 - Gn/M_bid;
% 扣分系数
H = h_bid * ones(vote_company_count, 1) .* (Gn > T_real) + h_bid;
% 计算得分, 保留两位小数
Yn = round(100 - H .* abs(Gn - T_real)*100 / T_real, 2);
% 列表扩充
result_vote = [file, table(Rp_vote, Yn, 'VariableNames', {'下浮率', '得分系数'})];
% 先根据得分排序, 然后根据下浮率排序
result_vote = sortrows(result_vote, [4, 3], "descend");
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%% Excel 内容
xlsx_content.result_vote = result_vote;
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%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%% 中标 K 值下浮参考、报价分析区 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
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K_result_real = cell(9, 9);
T_value = nan(9, 1);
our_vote_company_rank = nan(our_vote_company_count, 9);
for i = 1:9
    K_temp = Ks(i);
    T_temp = P_real * (1 - K_temp);
    H_temp = h_bid * ones(vote_company_count, 1) .* (Gn > T_temp) + h_bid;
    Yn_temp = round(100 - H_temp .* abs(Gn - T_temp)*100 / T_temp, 2);
    result_temp = [file, table(Rp_vote, Yn_temp, 'VariableNames', {'下浮率', '得分系数'})];
    result_temp = sortrows(result_temp, [4, 3], "descend");
    K_result_real{i, 1} = K_temp;
    K_result_real{i, 2} = T_temp;
    K_result_real{i, 3} = 1 - T_temp / M_bid;
    K_result_real{i, 8} = result_temp{1, 1};
    K_result_real{i, 9} = result_temp{1, 3};
    T_value(i) = T_temp;
    for k = 1:length(our_vote_company_valid)
        for j = 1:vote_company_count
            if strcmp(our_vote_company_valid{k}, result_temp{j, 1})
                our_vote_company_rank(k, i) = j;
                break;
            end
        end
    end
end
% 9 个 T 值区间, 也就是 10 个节点值
T_range = nan(10, 1);
for i = 1:8
    T_range(i) = T_value(i) + (T_value(i) - T_value(i + 1)) / 3;
end
T_range(9) = 2 * T_range(8) - T_range(7);
T_range(10) = T_range(9) - (T_range(1) - T_range(2));
% 统计区间家数
range_count = nan(9, 1);
for i = 1:9
    range_count(i) = sum(Gn < T_range(i) & Gn > T_range(i + 1));
end
% 区位价值
range_percent = range_count / sum(range_count);
range_value = 1 ./ (9 * range_percent);
% 区位价值排名
range_value_sort = sort(range_value, "descend");
% [range_rank, ~] = find(range_value_sort == range_value');
range_rank = nan(9, 1);
for i = 1:9
    range_rank(i) = find(range_value(i) == range_value_sort, 1);
end
% 区位范围
range_range = cell(9, 1);
for i = 1:9
    range_range{i} = [num2str((1 - T_range(i))/M_bid)*100, '%.3f'), '%~', num2str((1 - T_range(i)
end
% 赋值
for i = 1:9

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    K_result_real{i, 4} = range_count(i);
    K_result_real{i, 5} = range_value(i);
    K_result_real{i, 6} = range_rank(i);
    K_result_real{i, 7} = range_range{i};
end
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%% Excel 内容
xlsx_content.vote_company_count = vote_company_count;
xlsx_content.P_real = P_real;
xlsx_content.T_real = T_real;
xlsx_content.A_real = A_real;
xlsx_content.K_real = K_real;
xlsx_content.Rp_real = Rp_real;
xlsx_content.Rt_real = Rt_real;
xlsx_content.Ra_real = Ra_real;
xlsx_content.result_vote = result_vote;
xlsx_content.K_reault_real = K_result_real;
xlsx_content.our_vote_company_rank = our_vote_company_rank;
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%% 预测区分析 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
prediction_judge = nan(5, 3);
prediction_judge(1, 1) = vote_company_count;
prediction_judge(2, 1) = K_real;
prediction_judge(3, 1) = Rp_real;
prediction_judge(4, 1) = Rt_real;
prediction_judge(5, 1) = Ra_real;
% 投标人数得分
temp_err = vote_company_count_pre - vote_company_count;
if abs(temp_err) <= 10
    temp_score = 5;
elseif abs(temp_err) <= 20
    temp_score = 3;
elseif abs(temp_err) <= 30
    temp_score = 1;
else
    temp_score = 0;
end
prediction_judge(1, 2) = temp_err;
prediction_judge(1, 3) = temp_score;
% K 值得分
temp_err = K_pre - K_real;
if abs(temp_err) < eps
    temp_score = 15;
elseif abs(temp_err) < 0.005 + eps
    temp_score = 12;
elseif abs(temp_err) < 0.01 + eps
    temp_score = 9;
elseif abs(temp_err) < 0.015 + eps
    temp_score = 7;
elseif abs(temp_err) < 0.02 + eps
    temp_score = 5;
elseif abs(temp_err) < 0.025 + eps
    temp_score = 3;
else

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    temp_score = 0;
end
prediction_judge(2, 2) = temp_err;
prediction_judge(2, 3) = temp_score;
% P 值得分
temp_err = Rp_pre - Rp_real;
if abs(temp_err) < 0.002 + eps
    temp_score = 20;
elseif abs(temp_err) < 0.004 + eps
    temp_score = 12;
elseif abs(temp_err) < 0.006 + eps
    temp_score = 8;
else
    temp_score = 0;
end
prediction_judge(3, 2) = temp_err;
prediction_judge(3, 3) = temp_score;
% T 值得分
temp_err = Rt_pre - Rt_real;
if abs(temp_err) < 0.002 + eps
    temp_score = 50;
elseif abs(temp_err) < 0.004 + eps
    temp_score = 35;
elseif abs(temp_err) < 0.006 + eps
    temp_score = 23;
elseif abs(temp_err) < 0.008 + eps
    temp_score = 15;
else
    temp_score = 0;
end
prediction_judge(4, 2) = temp_err;
prediction_judge(4, 3) = temp_score;
% A 值得分
temp_err = Ra_pre - Ra_real;
if abs(temp_err) < 0.002 + eps
    temp_score = 10;
elseif abs(temp_err) < 0.004 + eps
    temp_score = 8;
elseif abs(temp_err) < 0.006 + eps
    temp_score = 5;
else
    temp_score = 0;
end
prediction_judge(5, 2) = temp_err;
prediction_judge(5, 3) = temp_score;
% 得分合计
score_pre = sum(prediction_judge(:, 3));
if score_pre >= 80
    bid_result_judge = '优良';
elseif score_pre >= 60
    bid_result_judge = '合格';
else
    bid_result_judge = '失败';
end
end

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%%%%%%%%%%%%%% Excel 内容
xlsx_content.prediction_judge = prediction_judge;
xlsx_content.score_pre = score_pre;
xlsx_content.bid_result_judge = bid_result_judge;
%%%%%%%%%%%%%% 导出 Excel %%%%%%%%%%%%%%%
% 设置文件保存路径
path_save = '\\longde\longde\008-投标中心\006-数据分析中心\分析结果汇总\';
filename = [path_save, project_name, '.xlsx'];
% 检查 Excel 是否已经打开
try
    % 若 Excel 服务器已经打开, 返回其句柄
    excel = actxGetRunningServer('Excel.Application');
catch
    % 创建一个Microsoft Excel 服务器
    excel = actxserver('Excel.Application');
end
% 设置 excel 不可见
excel.Visible = 0;
% 取消保存提示
excel.DisplayAlerts = false;
% 检查文件是否存在
if exist(filename, 'file')
    workbook = excel.Workbooks.Open(filename);
else
    workbook = excel.Workbooks.Add;
    workbook.SaveAs(filename);
end
% 删除之前的第一个 sheet
sheets = excel.ActiveWorkbook.Sheets;
sheets.Add;
sheets.Item(2).Delete;
% 返回第1个Sheet句柄
sheet1 = sheets.Item(1);
% 激活第1个表格
sheet1.Activate;
% 设置模板
sheet1 = SetExcelModule(sheet1, vote_company_count);
% 写入内容
sheet1 = SetExcelContent(sheet1, xlsx_content);
% 保存并关闭
workbook.Save;
workbook.Close;
excel.Quit;
% 打开 Excel
winopen(filename);

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